



# Impulse

Jerome J. Lohr College of Engineering  
South Dakota State University

Fall 2016

**STUDENTS  
MAKING A  
SPLASH**







## DEAR ALUMNI AND FRIENDS,

### Taking a moment to recognize greatness around us

As the pages fly off the calendar like the leaves in a November wind, the end of the fall semester and the college's winter graduation (Dec. 10) will soon be here.

The Jerome J. Lohr College of Engineering is unique within the university in holding a winter graduation. It's a short ceremony without the pomp of the universitywide spring graduation, but it provides the college, as well as parents and loved ones, an opportunity to immediately recognize the degree completion of these undergraduate and graduate students.

If you're able to be with us for this 10:30 a.m. ceremony and graduate luncheon in the Volstorff Ballroom, I certainly welcome you.

It was good to see so many of you during Hobo Day weekend activities. It's always a joy to make new friends and renew old acquaintances.

Two of our alums—Myron VanBuskirk and Delvin DeBoer—were among the six Distinguished Alums honored by the university. Myron has been one of Sioux Falls' prime real estate developers since 1971, and Del served on our faculty for 33 years before taking his water engineering skills to the private sector in 2012.

This Hobo Day weekend was also noteworthy for the college because Friday saw the second Harold Hohbach Endowed Professor recognized. Qiquan Qiao, an associate professor in electrical engineering, is following in the steps of David Galipeau, an electrical engineering professor who retired in January 2015.

The college is fortunate to have two endowed positions, which allow us to retain top talent and recruit top graduate and undergraduate students.

#### Impressive students

Speaking of top students, be sure to check out the stories in this issue. I'm continually impressed by their achievements, not only academically but also in extracurricular activities. One great example is the SDSU swimming and diving team. Five of them were named to The Summit League All-Academic Team and four of them are in the Lohr College of Engineering.

They've got a great focus—wait 'til you read their GPAs—and a vision to give back to society when they have completed their education.

#### Impressive faculty

The success any student gains also is reflective of the faculty. One of the faculty members I look back on fondly is the late mechanical engineering professor Clayton Knofczynski, who taught at SDSU for 29 years. The respect this electrical engineering major had for his thermodynamics instructor has carried with me to this day.

I'm not alone. Friends and former students are in the process of endowing a scholarship in "Kaa-nof's" name. I urge you to contact the SDSU Foundation and join me in honoring him.

While I admit to being a bit prejudiced about the goings-on within the Jerome J. Lohr College of Engineering, when you see the response from industry at our career fairs and in establishing scholarships for our students, I don't think my perspective is out of line.

I welcome you to come see for yourself.

In the meantime, may you have a wonderful holiday season.

*Lewis Brown '84 Ph.D.  
Dean of Engineering*

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- **Kathryn Walker** '81, retired chief network officer, Sprint Corp.

## ABOUT THE COVER

Noah Batenhorst dives from a platform approximately 70 feet high during a practice at Six Flags Discovery Kingdom in Vallejo, California. Batenhorst, a member of the Jackrabbits' swimming and diving team, has a 3.96 GPA in mechanical engineering and earned academic honors from The Summit League. Photo courtesy of Mirage Entertainment.

See story Page 6.

## IMPULSE

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# Impulse

Fall 2016



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# **SDSU Change Makers stress innovation**

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**“We want students, faculty and alumni—regardless of major, degree or occupation—who want to be centered around engineering, entrepreneurship, problem-solving, creativity and other topics to bring all of that together in a place where everyone can share ideas and knowledge.”**

Andrew Waterman, a mechanical engineering student

**B**uilding things has always been a goal for Todd Letcher. That goal started when Letcher, an assistant professor in the mechanical engineering department, was pursuing a bachelor's degree in that field at State. He took the goal a step further when earning a graduate degree at The Ohio State University, starting a wind turbine project and receiving grant funding for it.

Letcher then returned to State and started teaching “Introduction to Mechanical Design” and students have caught his building bug.

In addition to students competing and placing at the Innovative Additive Manufacturing 3-D Printing Challenge, students are now looking to take projects a step further.

When South Dakota State University was chosen in December 2015 as part of the third cohort for the Pathways to Innovation Program—a program run by the National Center for Engineering Pathways to Innovation, or Epicenter—Letcher and colleague Cory Mettler joined forces with Barb Heller and Craig Silvernagel of the entrepreneurial studies program. The four brought together students to determine the interest of a student-run group on campus.

That group exists today in the form of SDSU Change Makers, and it plans to implement a rental bicycle system on campus.

“We weren’t really sure what it was going to look like or how many students were going to be involved after the first few meetings,” said Andrew Waterman, a mechanical engineering student from Hawarden, Iowa. “At the end of last semester, we chose to pursue the creation

of a rental bike system that will be implemented on campus and, if we are successful on campus, maybe to the Brookings community.

“But along with the group project, we want to focus on different things,” he continued. “We want students, faculty and alumni—regardless of major, degree or occupation—who want to be centered around engineering, entrepreneurship, problem-solving, creativity and other topics to bring all of that together in a place where everyone can share ideas and knowledge. There’s an opportunity to do something awesome here. We’ve seen what other schools have done, and we can do it, too.”

That concept caught the attention of Spencer Harwood, a mechanical engineering student from Brookings.

“I like having the opportunity to work on a new concept with other students. It’s something that has not been done yet at SDSU,” he said. “I believe it will help me become a more well-rounded engineer.”

One of the other topics, an exo-frame, is the pursuit by Zach Schroeder, a mechanical engineering student from Aberdeen. A friend thought Schroeder would be a good fit for Change Makers.

“I showed up for a meeting and decided to become part of it,” said Schroeder, who would like to work in research and development after graduation. “It’s different. This is more actually building something. You have a project in your hands instead of being theoretical and solve for X.

“A lot of stuff I do is what I’ve learned from Todd; he’s been very helpful,” he continued. “I took a mechanical engineering machine design class from

him. That class showed us how to set up a machine, take the parts we designed and convert the G-code to machine language and have the machine mill it to an actual part. It’s been pretty beneficial. It helps companies see what a student can do—create a tangible product that shows what you’ve learned.”

That’s what Waterman and others have in mind with the rental bike project and other ideas that will become results with SDSU Change Makers.

“We don’t have anything like the bike rental project on campus. There’s a need or want for it. It’s something that is entrepreneurship-worthy and engineering-focused. We’re going to design this project and build it,” Waterman said. “We’re still trying to find out the direction and determine our business plan. What can it actually turn out to be? I don’t know. We need to sit down and plan it but we hope it can be something really worthwhile.

“Regardless, we’re going to be learning stuff that’s not going to take place in class and be involved in a physical, not theoretical, project. It’s a chance to build something cool, get lost in it and start working—what I want to do with my career at some point.”

[https://www.facebook.com/South-Dakota-State-Change-Makers-969032573188350/?ref=aymt\\_homepage\\_panel](https://www.facebook.com/South-Dakota-State-Change-Makers-969032573188350/?ref=aymt_homepage_panel)

Opposite: Zach Schroeder designed the two pieces for a possible exo-frame. Working with assistant professor Todd Letcher has kept Schroeder interested in the field of mechanical engineering.





# THROUGH REU

## Undergrads explore high-performance computing

**O**livia Comeau of Leominster, Massachusetts, has quite an answer when asked by her peers what she did for a summer job.

Comeau was one of 10 undergraduates selected to participate in the Research Experience for Undergraduates (REU) program, which is funded by the National Science Foundation. This was the second time in recent memory that the Jerome J. Lohr College of Engineering has hosted an REU cohort and the first time it was coordinated by the mechanical engineering department.

In 2012-15, the mathematics and statistics department hosted a Research Experience for Undergraduates program that focused on simulations and analysis.

The focus for this summer's 10-week program was high-performance computing, which means "using computing resources well beyond what a layperson would use, several hundred or even thousand processors working on solving theoretical or applied problems," explained Stephen Gent, an associate professor in mechanical engineering and the coordinator for this year's REU.

Selected students received a \$5,000 stipend, travel expenses, a meal allowance, support to attend a conference where they

will make a presentation and housing in the Honors Hall.

"The program was great. Brookings was great. I enjoyed it very much," said Comeau, a University of Massachusetts junior visiting this part of the country for the first time. Working with high-performance computing also was a new experience for the physics major. "I thought getting the experience would be extremely useful with whatever I wanted to do, even if it wasn't physics," she said.

### Creates an interest in research

With two years to go before earning her bachelor's degree, Comeau is not sure what will happen afterward, but she does know she wants to become involved in research in her remaining undergraduate years.

Her research at SDSU was under the mentorship of mathematics associate professor Jung-Han Kimn, who was assistant coordinator of this year's REU program and coordinator of the previous REU. Her project was formally titled: "Time Variation to Processor Allotment for an Example Problem/Parallel Implementation of the Dirac Equation."

In simple terms, she said her work looked at how the number of processors

affected the time it took to run codes to solve physics problems.

"I worked very closely with Dr. Kimn, which I really appreciated because this was a new experience for me. We met every day to see where I was at and what the next step was. If I hit a snag, I tried to figure it out myself. (But) Dr. Kimn said don't spend too much time on a problem. His door was always open and I also could ask other students for help," Comeau said.

### Two from SDSU in REU

She was one of four students housed in a work room on the second floor of the year-old Architecture, Mathematics and Engineering Building.

She shared computer lab space with Nicholas Stegmeier, who will graduate in May 2017 from SDSU. Stegmeier and Eric Looyenga were the only SDSU students in the cohort. Gent said up to three SDSU students could have been chosen. The coordinators for each REU make the selections based on applicant essays. Preference is given to students from smaller schools without a strong research program, he said.

Among the goals of Research Experience for Undergraduates is encouraging students to pursue careers in research.



Gent said the majority of the students in the 2012-15 Research Experience for Undergraduates program did go to grad school with two or three selecting SDSU. "It's a great recruiting tool," he said, noting that REU helped Caitlin Gerdes to receive the Graduate Research Fellowship award in 2013. That provided the SDSU mechanical engineering major \$30,000 per year for three years to pursue a graduate degree.

### Getting a taste of grad school

Such a selection is rare—SDSU hadn't had one since 2001—but all REU students gain a feel for what life would be like as a grad student.

Stegmeier said he intended to go to grad school before attending Research Experience for Undergraduates, but the 10 weeks "definitely gave me a better idea of what grad school will be like. It's mostly independent work, not classroom work. I always felt stuck but I was stuck at a different point, so there was progress.

"I think that's what grad school will be like. You're stuck each day, but there's a new problem."

The problems that had him stuck this summer were related to "Implementing Parallel Numerical Procedures for Turbulence Simulations" on behalf of Jeffrey Doom, an assistant professor in mechanical engineering. He was one of this year's REU mentors, but Stegmeier's primary mentor was mathematician Kimn.

Stegmeier said he had multiple visits each day with Kimn and met once or twice a week with Doom, whose project measured simulated fluid flows.

Stegmeier's work wasn't in the measuring of the fluids but in the rewriting of the computer program to produce answers more quickly. "We took the numbers it was producing before it was adjusted and solved it using a different algorithm," Stegmeier said in a deceptively simple explanation.

The algorithm was in PETSc, a library of algorithms, which took Stegmeier six weeks to become comfortable in using, he said.

### Grow in computer and people skills

PETSc also was among the computer languages that Comeau learned. In addition to the coding knowledge she

gained, she appreciated building her communication and teamwork skills. "We all have our (own) projects, but four of us are in the same office and three of us have projects that overlap and use the same software tools," she said.

Gent explained, "A lot of the tools the students are using are similar, but they're used in very different ways to answer a diverse set of problems."

For example, Chelsea Manners' project applied to biomedical engineering. She used computer simulation to gauge the effect on blood pressure and blood clots when stent grafts are inserted in the abdominal aorta. She took the researchers' test data and performed calculations with three variables to determine when cell counts went over a threshold.

Manners, of the University of Houston, also used a program in Java script to allow the researchers to run the data on their home computers.

"I can't tell you how many times I've been pulling my hair out," said Manners, noting the work was like writing a new book for a library. Her "book," CFD Solver, is a customized program designed strictly for the work Gent is doing with researchers at Sanford in Sioux Falls. Gent's expertise is in computational fluid dynamics.

As a result of her REU experience, Manners now is considering getting her doctorate. "I always wanted to get my master's in artificial intelligence."

### Diverse mentors, creative social activities

Mentors for this year's Research Experience for Undergraduates included three faculty from plant science, one from chemistry, two from mathematics and statistics and three from mechanical engineering. In addition, the chemistry department hosted an REU of 10 students and the bioenergy program with the College of Agriculture and Biological Sciences was in the final year of its REU and had six students.

Lew Brown, dean of the Lohr College of Engineering, calls REU an indicator of a research university. Having three in one summer indicates the growth of SDSU's status, he said.

The REU experience is Monday-Friday with socializing built in during the week and on the weekends.

The REU students planned the activities, which included things as simple as playing Catch Phrase or group juggling of a volleyball with feet, to a trip to the Black Hills. On Fridays, they gathered at the Dairy Bar. Overall, the campus visitors left with favorable impressions of both SDSU and Brookings. "It made me think about living in Brookings for a second," said Comeau, who lives an hour from Boston.

Manners, of Houston, enjoyed the lack of congestion, the lakes without alligators and the rabbits—"you have sooo many rabbits."

*Dave Graves*

Members of the REU organized by the mechanical engineering department gather outside Crothers Engineering Hall on their last full day, Aug. 4. REU (Research Experience for Undergraduates) is funded by the National Science Foundation. Pictured are, front row, from left, Zavia Epps, Zoey Glenn, Olivia Comeau, Michaela Crouch, Chelsea Manners and assistant coordinator Jung-Han Kimn. Back row, Joseph Robertson, graduate mentor; Jason Kiehne, Eric Looyenga, Colin Marsh, Jace Neubaum, Nicholas Stegmeier and coordinator Stephen Gent.

### Student Participants, Projects and Mentors

Olivia Comeau Univ. of Massachusetts Physics Jung-Han Kimn	Eric Looyenga South Dakota State Mechanical Engineering Stephen Gent/ Greg Michna
Michaela Crouch Univ. of South Dakota Biology Suvo Chakravarty	Chelsea Manners Univ. of Houston Computer Engineering Tech. Gent
Zavia Epps Jackson State Univ. Statistics Kimn/Gary Hatfield	Colin Marsh Northeastern State Univ. Computer Science/ Mathematics Kimn
Zoey Glenn Drake University Data Analysis Anne Fennell	Jace Neubaum Morningside College Computer Science Jeffrey Doom
Jason Kiehne Simpson College Physics/Engineering Sentil Subramanian	Nicholas Stegmeier South Dakota State Mathematics/Mech. Eng. Kimn



# Smart

Student-Athletes  
populate  
SDSU pool





## “One good thing about swimming and diving is that it is an individual sport.”

Brad Erickson, SDSU men's and women's swimming and diving coach

Since being named the men's and women's swimming and diving coach in 1976, Brad Erickson has learned a few things over the years. One of those things is how to adapt his teams' practice schedules to accommodate the student-athletes' academic schedules.

That ability paid off in 2015-16 with five members of the two programs being named to The Summit League All-Academic Team. Four students in the Jerome J. Lohr College of Engineering, Noah Batenhorst, Weston Christensen, Jessie Hendricks and Chris Rumrill, were on that team. Christensen added to those honors by being named to the CoSIDA Academic All-America Division I Men's At-Large Third Team.

“What we tell them when we recruit them and what actually happens when they're here are the same thing—we will work around their academic schedules,” Erickson said. “One good thing about swimming and diving is that it is an individual sport. It's not like running football or basketball practice and that if you want to run some plays, you have to have the team there. Sometimes it's a disadvantage for those student-athletes because they're by themselves but we try to get them people to swim with. Ultimately, they're swimming against the clock—it's their friend and it's their enemy. We do our best to get those people in and if they're willing to adjust schedules to make it work, that's what we do.”

The four honorees all cited time management as a key element to balancing the demands of their majors and time spent either at practice or in competitions.

### Here is a look at the student-athletes.

#### Weston Christensen

Christensen joined the Jacks after one semester at the University of Nebraska. His mother, Theresa '83/'93, also swam for Erickson, but it was the chance to swim collegiately while pursuing an engineering degree that brought Christensen to State. A former high school teammate also helped draw Christensen's attention to engineering and SDSU.

“I took a chance and have loved every second here,” Christensen said. “It helps there are other high school teammates here now. When I came, Alex McLain was still on the team. He was a big motivator for me in high school. He pushed us to be better swimmers and helped bring us to the level so we could make it here. He also was a civil engineering major—I kind of followed his footsteps.”

“I guess I've followed his lead in that I know I got a leg up from upperclassmen to figure some stuff out so now that I'm an upperclassman, it's my turn to do the same whenever I get the chance,” he continued. “I think we have some really high-performing student-athletes at SDSU—that helps to be around other student-athletes who are working hard in the classroom.”

A senior from Pierre, Christensen has recorded a perfect 4.0 GPA while majoring in civil engineering. He is thinking of going to graduate school in mechanical engineering with the goal of applying his civil engineering knowledge to work with



#### Chris Rumrill

One of the younger students who Christensen has helped is Rumrill, who is also from Pierre, and has a brother, Wyatt, on the squad.

“Since you don't always look into the future a whole lot when in high school, it was nice to have Weston a year ahead of me. He was a great mentor and set a great example. I just wanted to follow in his footsteps,” Rumrill said. “Weston taught me about things I didn't necessarily know about, such as taking the PSAT, which gave you a shot at being a National Merit Scholar and getting a good academic scholarship.”

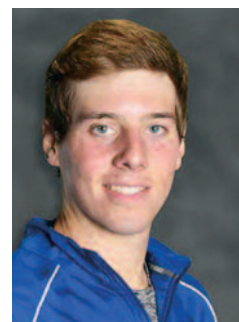
Rumrill, who was a National Merit Scholar, chose State because of the swimming and diving program and the Jerome J. Lohr College of Engineering.

“I picked engineering because math has been my favorite subject since elementary school and, in high school, I loved the sciences, particularly biology. I figured a good combination of math and science would be engineering.”

Rumrill, who also has a 4.0 GPA as an electrical engineering major, would like to pursue a master's degree or a doctorate in biomedical engineering and work on tissue engineering.

But first comes getting his bachelor's degree and competing for the Jackrabbits.

“Some day it may come I might not get all A's. If that happens, I'll do my best the next semester to try to get all A's. If you put the effort in, you'll usually get the grade you put the effort in for,” Rumrill said. “I





think swimming naturally develops good time management skills but the coaches here do their best to make sure you do succeed.

"The coaches also do an excellent job of scheduling practices so you can go to the classes and labs when you need to, but still be part of the swim team and not practicing at 10 p.m. or 4 a.m.," he continued. "They know your classes come first and do what they can to make your swim and class schedules work."

### Jessie Hendricks

After wrapping up her undergraduate days with a 3.97 GPA in mathematics, Hendricks is taking her disciplined approach to graduate school.

She is pursuing a master's degree in mathematics with an emphasis in statistics at State.

"Swimming, as well as all other sports, requires a lot of hard work and dedication," she said. "Our work ethic in the pool and competitive nature carries through to other aspects of our lives, especially academics. It also helped to have teammates with similar practice schedules who were working toward the same academic goals.

"As a student-athlete, I was forced to develop good time-management skills. If you have a little time between classes, or time before practice, you learn to use your time wisely and work on assignments. While I don't have to worry about practice now, I'm taking the same approach due to the demands of graduate school," Hendricks continued. "I also learned to start assignments early. If you do that and have questions, you have time to ask your professor or classmates instead of staying up well past midnight when you still have to be up at 5 a.m. for swimming or 6 a.m. for weights. In the long run, starting assignments early saved me a lot of time and stress."

Hendricks has been involved in several research projects in forensic statistics.



However, she does not plan to be a criminal science investigator. Hendricks hopes to pursue a career that would allow her to apply math and statistics toward medical research.

### Noah Batenhorst

Batenhorst's approach to balancing academics, athletics and life carries over to his summer occupation as a show diver. He has participated in Mirage

Entertainment's shows in Six Flags Discovery Kingdom in Vallejo, California, and at Dutch Wonderland in Lancaster, Pennsylvania.

"Some of the highlights of those shows included lighting yourself on fire and jumping off a 70-foot perch into a 9- or 10-foot tank," said Batenhorst, who has been a two-time selection to The Summit League All-Academic Team. He has a 3.96 GPA in mechanical engineering. "I've really, really enjoyed that job."

While most of the dives for Mirage Entertainment are not what he does when competing for the Jackrabbits, Batenhorst does get to practice his collegiate competition dives.

"Whenever we would practice or warm up, a crowd would gather so the park decided to make it a show," he said. "That show has been really helpful for my college career. Since there wasn't a script, I could do whatever dives I wanted to do. And, since I wasn't in a full-body costume, I could do the harder dives. That show allowed me to practice the dives I'd do in a college competition, which was really nice.

"Regardless of where I'm diving, it's an individual sport and it comes down to the work I've put into it," Batenhorst continued.

He takes that approach to the classroom. When looking for a college to major in engineering and compete, South Dakota State quickly rose to the top of Batenhorst's list to visit. His major choice



came after a conversion with his father, Patrick, who has an engineering degree.

"One day, my father asked, 'What do you want to be and what kind of degree do you want to get?' I said I had no idea. He said, 'You like math and science and are not a fan of English and reading so be an engineer.' That was it," said Batenhorst, who is from Omaha, Nebraska. "I was looking for a DI school because that's what I wanted to do with my diving career and South Dakota State has a good engineering program. It came down to academics first, athletics second, close to home third.

"I want to go into the field of sustainable or renewable energy. I'd like to try to help provide the energy our society needs but lessen the impact it puts on our environment," he continued. "It's really nice most of my roommates are engineering majors. We have our own study group at home. I just have to make sure I manage my time so I can go to practice, get enough sleep and do my best all around college."

And their honors show that Batenhorst and the others are doing just that.

*Matt Schmidt*

Page 6: Batenhorst is the lower performer in a routine called military.

Below: Batenhorst dives from a 70-foot platform at Dutch Wonderland in Lancaster, Pennsylvania.

Opposite: Batenhorst, in the frog suit, dives at Dutch Wonderland.

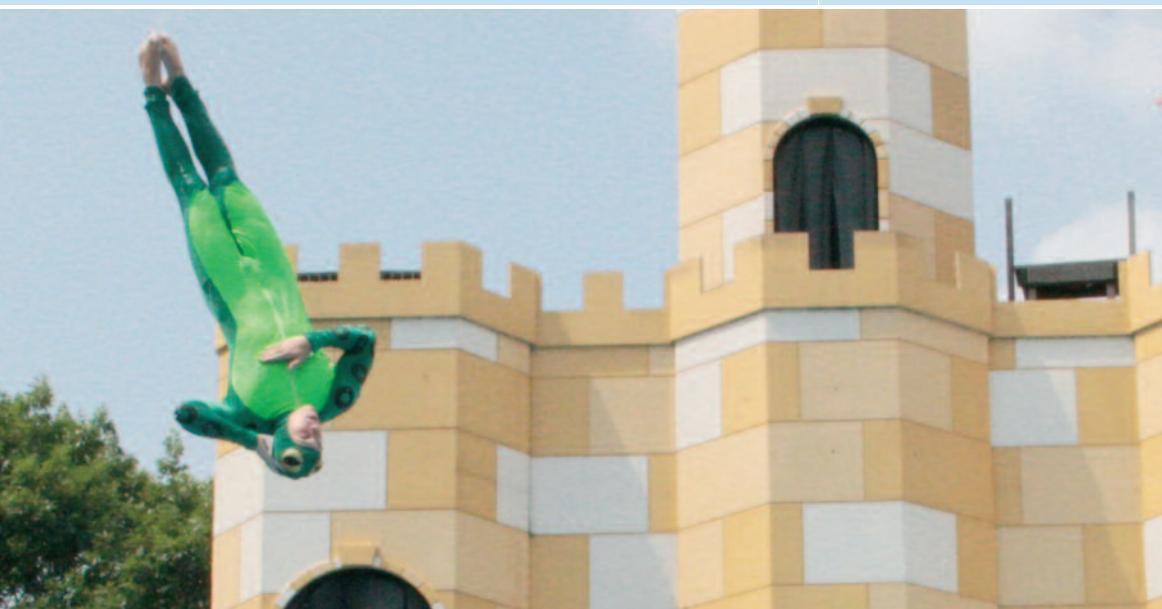
Opposite inset: Batenhorst is the upside-down performer in a routine called baby catch.

Photos courtesy of Mirage Entertainment.



# Jerome J. Lohr College of Engineering **STUDENT-ATHLETES**

NAME	MAJOR	TEAM(S)	NAME	MAJOR	TEAM(S)
Acker, Mitchel	Mathematics	Men's Track and Field	Khouja, Abdulmaten	Civil engineering	Men's Tennis Team
Almeida, Gustavo	Mechanical engineering	Men's Tennis	Lang, Caleb	Agricultural and biosystems engineering	Football
Anderson, Adam	Construction management	Football	Langer, Cole	Mechanical engineering	Football
Andronowitz, Jessica	Civil engineering	Equestrian	Lansman, Seth	Mechanical engineering	Football
Barrett, Austin	Mechanical engineering	Football	Leiseth, Mason	Mechanical engineering	Football
Batenhorst, Noah	Mechanical engineering	Men's Swimming and Diving	Leiseth, Tristen	Mechanical engineering	Football
Bates, Peter	Mechanical engineering	Men's Track and Field	Leonhard, Dakota	Civil engineering	Men's Track and Field
Branick, Brendan	Mathematics	Men's Track and Field	Lewis, Marquise	Electronics engineering technology	Football
Bray, Caleb	Mechanical engineering	Men's Track and Field	Medler, Kiley	Civil engineering	Women's Soccer
Brockel, Brady	Civil engineering	Men's Track and Field	Meyer, Kyle	Computer science	Men's Track and Field
Carlson, Elle	Mechanical engineering	Women's Golf	Molitor, Elizabeth	Mechanical engineering	Women's Track and Field
Carr, Nicholas	Mechanical engineering	Football	Monjardim Rosa, lasmin	Civil engineering	Women's Tennis
Castro, Marco Paulo	Civil engineering	Men's Tennis	Mulholland, Blair	Electrical engineering	Football
Christensen, Weston	Civil engineering	Men's Swimming and Diving	Munsterman, Ray	Mechanical engineering	Men's Track and Field
Clark, Matthew	Mechanical engineering	Football Team	Ohnesorge, Jacob	Mechanical engineering	Football
Crow, Alex	Computer science	Men's Swimming and Diving	Palmer, Sydney	Mechanical engineering	Women's Basketball
Czapiewska, Emilia	General engineering	Volleyball	Pereira, Lucas	Mechanical engineering	Men's Tennis
Dobrenski, Michael	Mathematics	Football	Prasher, Samantha	Mechanical engineering	Women's Swimming and Diving
Duerr, Taylor	Civil engineering	Equestrian	Radtke, Daniel	Mathematics	Men's Track and Field
Ensrud, Emily	Mechanical engineering	Softball	Ringhofer, Luke	Mechanical engineering	Baseball
Fasen, Anna	Mechanical engineering	Women's Cross Country, Women's Track and Field	Ross, Nicholas	Construction management	Baseball
Fitzgerald, Matthew	Mechanical engineering	Football	Rumrill, Christopher	Electrical engineering	Men's Swimming and Diving
Flaata, Tiffany	Mechanical engineering	Women's Basketball	Sage, Brendan	Mathematics	Men's Cross Country, Men's Track and Field
Fry, Matthew	Civil engineering	Football	Shea, Taylor	Computer science	Baseball
Funk, Nolan	Mechanical engineering	Wrestling	Smith, Grant	Mathematics	Men's Golf
Goedert, Dallas	Operations management	Football Team	Sontag, Mark	Construction management	Baseball
Goehring, Joshua	Mechanical engineering	Men's Track and Field	Sowada, Sebastian	Mathematics	Men's Cross Country, Men's Track and Field
Greeneway, Evan	Civil engineering	Football	Tang, Chuck	Electrical engineering	Men's Tennis
Gross, Seth	Computer science	Wrestling Team	TerWee, Micayla	Mathematics	Women's Track and Field
Gunning, Mykin	Civil engineering	Women's Swimming and Diving	Theobald, Ashley	General engineering	Women's Swimming and Diving
Hart, Kallan	Civil engineering	Football	Vejvoda, Mitchell	Mechanical engineering	Football
Harvey, Nicole	Mechanical engineering	Equestrian	Weisbeck, Lexi	Construction management	Women's Cross Country, Women's Track and Field
Hejna, Jordan	Mathematics	Men's Track and Field	Wessels, Nicholas	Computer science	Men's Track and Field
Hinton, Paige	Mathematics	Women's Swimming and Diving	Wolters, Blake	Agricultural and biosystems engineering	Wrestling
Holtz, Logan	Construction management	Baseball	Zamora, Phillip	Computer science	Wrestling
Ivanecky, Samuel	Electrical engineering	Men's Track and Field	Zazula, Nichole	Operations management	Equestrian
Janssen, Eric	Computer science	Men's Cross Country, Men's Track and Field	Zenner, Samuel	Operations management	Men's Track Team
Kassim, Ayub	Electronics engineering technology	Men's Cross Country, Men's Track and Field			





# Youth Camps



**SOUTH DAKOTA STATE UNIVERSITY**

*Jerome J. Lohr College of Engineering*

SDSU Jerome J. Lohr  
College of Engineering:  
[www.sdstate.edu/engr/](http://www.sdstate.edu/engr/)

## **Ready, SET (Science, Engineering, Technology) Go!**

DATE: Nov. 19, 2016.

LOCATION: Crothers Engineering Hall.

The annual all-day session is the high school version of GEMS. It uses professional women and hands-on activities, such as electrical circuitry, electrical consumption and water treatment, to inspire girls to pursue courses of study introduced during the workshop. There also is a separate session to share college information with parents.

COST: \$25 by Nov. 12, \$35 late registration, advanced registration requested.

CONTACT: Rich Reid, associate dean for academics, [richard.reid@sdstate.edu](mailto:richard.reid@sdstate.edu), 605-688-4161, [sdstate.edu/engr/camps/ready-set-go.cfm](http://sdstate.edu/engr/camps/ready-set-go.cfm).

## **TEAMS (Tests of Engineering Aptitude, Mathematics and Science)**

DATE: Feb. 23, 2017, 1-5 p.m.

LOCATION: Volstorff Ballroom, University Student Union

TEAMS is a one-day national competition that gives high-school and middle-school students an opportunity to discover engineering and apply knowledge. Teams of four to eight students work together to solve real-world engineering problems in a two-part competition, including multiple choice and short-answer essay questions.

COST: \$125 per team.

CONTACT: Kim Prohaska, lecturer, computer science, [kim.prohaska@sdstate.edu](mailto:kim.prohaska@sdstate.edu) or 605-688-6268.

## **GEMS (Girls, Engineering, Mathematics and Science)**

DATE: March 25, 2017

LOCATION: Crothers Engineering Hall

The annual all-day session is designed to stimulate eighth-grade girls to pursue courses of study introduced during the hands-on

workshop, which includes robots, bridge building and forensic science. There also is a separate session to share college information with parents.

COST: \$25, \$35 for late registration; advanced registration requested.

CONTACT: Rich Reid, associate dean for academics, [richard.reid@sdstate.edu](mailto:richard.reid@sdstate.edu), 605-688-4161, [sdstate.edu/engr/camps/gems.cfm](http://sdstate.edu/engr/camps/gems.cfm).

## **Eastern South Dakota Science and Engineering Fair**

DATE: March 21, 2017

LOCATION: Frost Arena

An all-day, judged exhibit for middle school and high school students who first compete at their local science fair. Grand-prize winners in the senior category receive an all-expense-paid trip to the Intel International Science and Engineering Fair, held in a new location every year.

Cost: No charge to enter, but advanced registration required.

Contact: Brad Blaha, science fair director, [bradley.blaha@sdstate.edu](mailto:bradley.blaha@sdstate.edu), 688-5133.

## **Program Design Challenge**

DATE: April 6, 2017

LOCATION: University Student Union

Three-person teams from area high schools demonstrate their computer programming design in front of a panel of judges that include computer science and software engineering faculty as well as representatives from Daktronics and the Council for Economic Education.

COST: \$40.

CONTACT: Jerry Cooley, instructor, computer science, [jerry.cooley@sdstate.edu](mailto:jerry.cooley@sdstate.edu), or 605-688-6618; Myounggyu.Won, [myounggya.won@sdstate.edu](mailto:myounggya.won@sdstate.edu), assistant professor, 688-5703, [sdstate.edu/eecs/program-design/index.cfm](http://sdstate.edu/eecs/program-design/index.cfm).

## **Engineering Expo & Physics Bowl**

DATE: April 28, 2017, 9 a.m.-3 p.m.

LOCATION: Swiftel Center, Brookings

High-school students compete in contests for prizes and bragging rights in such events as human wallpaper, photovoltaic cannon and rocket car. Math and physics competitions also are held. The expo annually attracts about 400 high schoolers from eastern South Dakota, western Minnesota and Iowa, and eastern Nebraska. It is held in conjunction with the college's senior design project display and competition.

COST: Free. Advanced high school registration requested.

CONTACT: 605-688-4161, [SDSU\\_EXPO@hotmail.com](mailto:SDSU_EXPO@hotmail.com), [sdstate.edu/engr/camps/expo/index.cfm](http://sdstate.edu/engr/camps/expo/index.cfm).

## **Youth Engineering Adventure**

DATE: June 18-22, 2017

LOCATION: on campus

The camp allows high-school students to discover the world of engineering through tours, demonstrations, hands-on projects and interaction with engineering professionals. Students are divided into groups of 10 and each group works closely with an engineer in their hands-on activities.

COST: Cost: \$200. Advanced registration required.

CONTACT: Geoffrey Bonvallet, physics department lecturer, [geoffrey.bonvallet@sdstate.edu](mailto:geoffrey.bonvallet@sdstate.edu), 605-688-4977.

## **ACE (Aerospace Career and Education) Camp**

DATE: July 9-12, 2017

LOCATION: on campus

Sponsored by NASA and hosted at SDSU, this four-day camp provides high school students a look at aviation and aerospace careers. Students will receive two hours of flight



## READY, SET GO! WORKSHOP CONNECTS CLASSES TO CAREER

and ground training, get behind the controls of an aircraft, build and launch air rockets, look into the workings of a jet engine, explore an F-16 fighter jet and visit with aviation professionals.

COST: \$350, advanced registration required. Tuition assistance up to \$200 available.

CONTACT: Cody Christensen, assistant professor, aviation, [acecamp@sdstate.edu](mailto:acecamp@sdstate.edu), 605-688-4983, <http://southdakotastate.prod.acquia-sites.com/consumer-sciences/ace-camp>

### Electrical Engineering Camp

DATE: July 30-Aug. 5, 2017

LOCATION: Daktronics Engineering Hall

This unique camp combines outdoor adventures with high-tech electrical engineering activities. Designed for students who have completed their sophomore year, the camp lets students create electrical devices, tour engineering facilities on- and off-campus, canoe, ride horseback and undertake other outdoor activities.

COST: \$750. Advanced registration required. Register at: [www.sdstate.edu/eecs/camps](http://www.sdstate.edu/eecs/camps).

CONTACT: Cory Mettler, camp director, instructor, electrical engineering, 605-688-5306, [cory.mettler@sdstate.edu](mailto:cory.mettler@sdstate.edu).

### BEST Robotics

DATE: Oct. 28, 2017

LOCATION: TBD, Brookings.

BEST (Boosting Engineering, Science and Technology) Robotics is part of a national robotics competition for high school and middle school teams. Local winners advance to regions. Kick-Off Day: Sept. 16, University Student Union. Participants receive kits and learn game objectives.

COST: There is no registration fee, but teams must have entered six weeks in advance of the local contest.

CONTACT: Kim Prohaska, Jackrabbit BEST hub director, [kim.prohaska@sdstate.edu](mailto:kim.prohaska@sdstate.edu) or 605-688-6268, [sdstate.edu/engr/camps/best-robotics/index.cfm](http://sdstate.edu/engr/camps/best-robotics/index.cfm).

A \$25 investment to attend a one-day camp at State may net freshman Sierra Lutz a return measured in the hundreds of thousands.

Lutz, an Argus Leader Academic All-Star with a 4.0 GPA and a 30 ACT score, is majoring in mathematics and minoring in computer science at SDSU after graduating from Estelline High School in May. In November 2015, she attended the 10th annual Ready, SET Go! workshop to inspire high-school girls to pursue careers in science, engineering and technology.

The keynote speaker at the Nov. 14 session was Christina Achjampong, an operations research analyst with the Department of Defense in Washington, D.C.

"It was the day after the Paris (terrorist) attacks and she said she wished she could be back at her job helping her colleagues," Lutz recalled in an interview this summer. "To me, that was so inspiring that she wanted to be back at her job. I want to wake up and say I want to go to work today. I want that drive."

Lutz, who lives north of Bruce and is involved in the town's community club, has never lacked for drive and as a junior established a lofty career goal.

The daughter of Rob and Pennie Lutz wanted to work for the National Security Administration. The math-loving scholar just wasn't sure how to write that equation. Then she went to the Ready, SET Go! workshop after seeing an article in the newspaper. The mathematician Achjampong was to present a session on "Breaking the Code."

Lutz not only learned how to break the code, she also learned how a mathematician can get a good-paying job in national security.

One of the workshop activities was to decode a message on a handout. "I love puzzles," she said. Once she was figured out that the fifth letter represented "A," she was able to demystify the message. "It was so fun" and the light turned on, she said. "This is what I wanted to do. It has math, which I love, and serves national security."

### The choice is SDSU

When it came time to decide where to pursue a math degree, the decision was simple for Lutz, whose father is a 1996 Jerome J. Lohr College of Engineering grad.

"SDSU really had what I wanted and I met with Dr. (Kurt) Cogswell. He really sold me on the math department. He was a huge part of the reason I came. He said the department has a 96 percent placement rate. He seemed so interested in what I wanted to do and would structure classes for me in the direction I wanted to go," Lutz said.

The department head points to the National Security Administration website: "Mathematics is a core discipline at NSA, which is why we're known as the largest employer of mathematicians. Mathematics problems are present in every aspect of NSA's mission. ... Computing is an essential component of mathematics at NSA."

### Department strengthens program

He added, "During the past 10 years, the SDSU Department of Mathematics and Statistics has substantially strengthened our program in the areas of computational mathematics and statistics by introducing two new master's degree programs and a Ph.D. program in those areas and hiring several faculty members specializing in those fields.

"This means our students are better prepared to work on problems of importance to the NSA, including those in cryptography, data mining, forecasting and temporal analysis, signals analysis, and speech and text processing."





## Qiquan Qiao

### Hohbach Endowed Professor rapidly moves to top in photovoltaics

Just over a decade ago, Qiquan Qiao was packing his bags to leave his native China to pursue an engineering doctorate in the United States.

He earned the degree in 2006 from Virginia Commonwealth University and then spent a year in postdoctoral work in the chemistry department at the University of Florida. By fall 2007, Qiquan Qiao (pronounced Chet-twan Chow) was trying to figure out what a jackrabbit was while setting up a lab at his first permanent academic position—assistant professor in the electrical engineering department at South Dakota State University.

His rise in the scientific community has been as rapid as the light particles that he studies; crowned most recently by the designation of endowed professor.

The son of Dongfu Qiao, a farmer in the eastern province of Anhui, Qiao officially was bestowed the title of Harold C. Hohbach Associate Professor at a 25-minute investiture ceremony in the lobby of the Architecture, Mathematics and Engineering Building Oct. 21, 2016, the afternoon of Hobo Day Eve.

Barry Dunn, president of the university, brought his personal congratulations to Qiao, who was able to share the day with his wife, Jia You, and his mother, Wenyan Su, of Anqing.

#### Credit to his colleagues

“I am so humble to be selected for the Hohbach Professorship. It is a great honor and privilege,” Qiao told the gathering that included the namesake of the college, Jerome J. Lohr, other alumni benefactors

and many of his colleagues in the electrical engineering department.

“I never thought about a medal in my life. This professorship has reminded me that the electrical engineering/computer science department, the Jerome J. Lohr College of Engineering and SDSU have been great places to work at. Since 2007, I have thoroughly enjoyed working with students, colleagues and administrators.

“According to my wife, my department head and many others, I work very hard and this is perhaps one reason for my success.

“However, hard work alone never guarantees success as we all know. If it were not for the wonderful environment SDSU has provided and the great people I have been able to work with, I would most

certainly not be standing here today receiving this recognition,” Qiao said.

### **Qiao—An exemplary model**

Steve Hietpas, department head, said Qiao was selected because he “has been an exemplary model of what the Hohbach professor should be.”

Namely, that is “providing the very best education to our students, performing nationally recognized research and serving the needs of our constituents as well as having strong leadership and organizational skills, innovative ideas, and a passion and ability to assist the department in meeting its strategic goals and initiatives,” Hietpas said.

There can be little doubt about Qiao’s innovation and initiative.

Qiao began winning awards at SDSU in 2009, his third year on faculty. His honors include the 2016 Outstanding Researcher of the Year and 2012 Young Investigator Award from the Lohr College of Engineering and the 2010 National Science Foundation’s CAREER Award.

Dean Lew Brown called Qiao “an outstanding young man” whose work already is attracting top graduate assistants.

### **Studies organic electronics materials**

Qiao, who has established a lab devoted to studying organic electronic materials and devices, oversees a group of 18 graduate students, postdocs and research fellows. He also coordinates the Center for Advanced Photovoltaics and Sustainable Energy at SDSU as well as the electrical engineering graduate program.

This year, he secured more than \$1 million in federal research funding, and as coordinator of the graduate program, oversees research projects totaling more than \$2 million.

Organic solar cells are less expensive to produce than silicon-based technologies, Qiao explained. The flexible, plastic materials use “solution-based processing without high temperature or high vacuum requirements, which decreases the cost of production,” he said.

His research seeks to improve the efficiency of organic solar cells by using tunnel junctions to provide more effective pathways through which charge can travel, thus reducing the energy losses. Engineers define efficiency as the energy that is generated by the photovoltaic device divided by the sunlight energy that’s going into it. A device that is 10 percent efficient can generate 100 watts per square meter if 1,000 watts of solar energy are reaching each square meter of the earth’s surface. His goal is to increase the efficiency from 10 to 15 percent.

Because energy storage is a key challenge, Qiao and his battery group seek to build a single unit that will both generate and store solar energy.

Through a grant from the United States Agency for International Development, Qiao is collaborating with researchers from Khan Institute of Engineering Sciences and Technology in Pakistan to help them learn fundamental techniques for developing dye-sensitized solar cells.

### **Follows path of Galipeau**

Qiao’s work is housed in Daktronics Engineering Hall, where he continues the work of the initial Hohbach Professor Emeritus David Galipeau.

Galipeau, who received the five-year award in 2011 and retired Jan. 21, 2015, continues to assist with photovoltaic research and was present for Qiao’s investiture. He called Qiao a “very successful researcher whose record of grant awards, published technical presentations and graduate-student advising make him an obvious choice for this career-shaping honor.”

Qiao said, “The Harold Hohbach Professorship will allow me to establish internal and external collaborations to target regional and national research centers at the Lohr College of Engineering and allow me to travel internationally to recruit top graduate students to our EE program.”

The award covers expenses for five years and can be renewed.

*Dave Graves*

## **THE MAN BEHIND THE ENDOWMENT**

Long before the first funds were drawn for the Hohbach Endowed Professorship in Electrical Engineering, Harold C. Hohbach was tidying away funds for that purpose.

Lew Brown, dean of the Jerome J. Lohr College of Engineering, said Hohbach began setting aside funds for that purpose in the 1990s. The first award was made in 2011. The second award was made Oct. 21, 2016, to Qiquan Qiao, an associate professor in electrical engineering. Like Hohbach Professor Emeritus Dave Galipeau, Qiao’s focus is in photovoltaics.

There was no photovoltaics program at State College when Hohbach earned his electrical engineering degree in December 1943.

As with virtually all males who graduated then, the next stop was at a military base. Hohbach served in the U.S. Army Signal Corps and attained the rank of first lieutenant by the end of his tour in Germany in 1946. He then went to college, earning a bachelor’s degree in business administration from Cal-Berkeley in 1947.

Hohbach followed that with two years as a trainee and sales engineer with Westinghouse before returning to Cal-Berkeley as a law student.

He graduated in 1952 and joined a San Francisco firm as an associate patent attorney. He became a partner in 1958 and his name was added to the corporation in 1968. The Plankinton native spent his career dealing with intellectual property rights, particularly in the fields of electronics, semiconductors and medical devices.

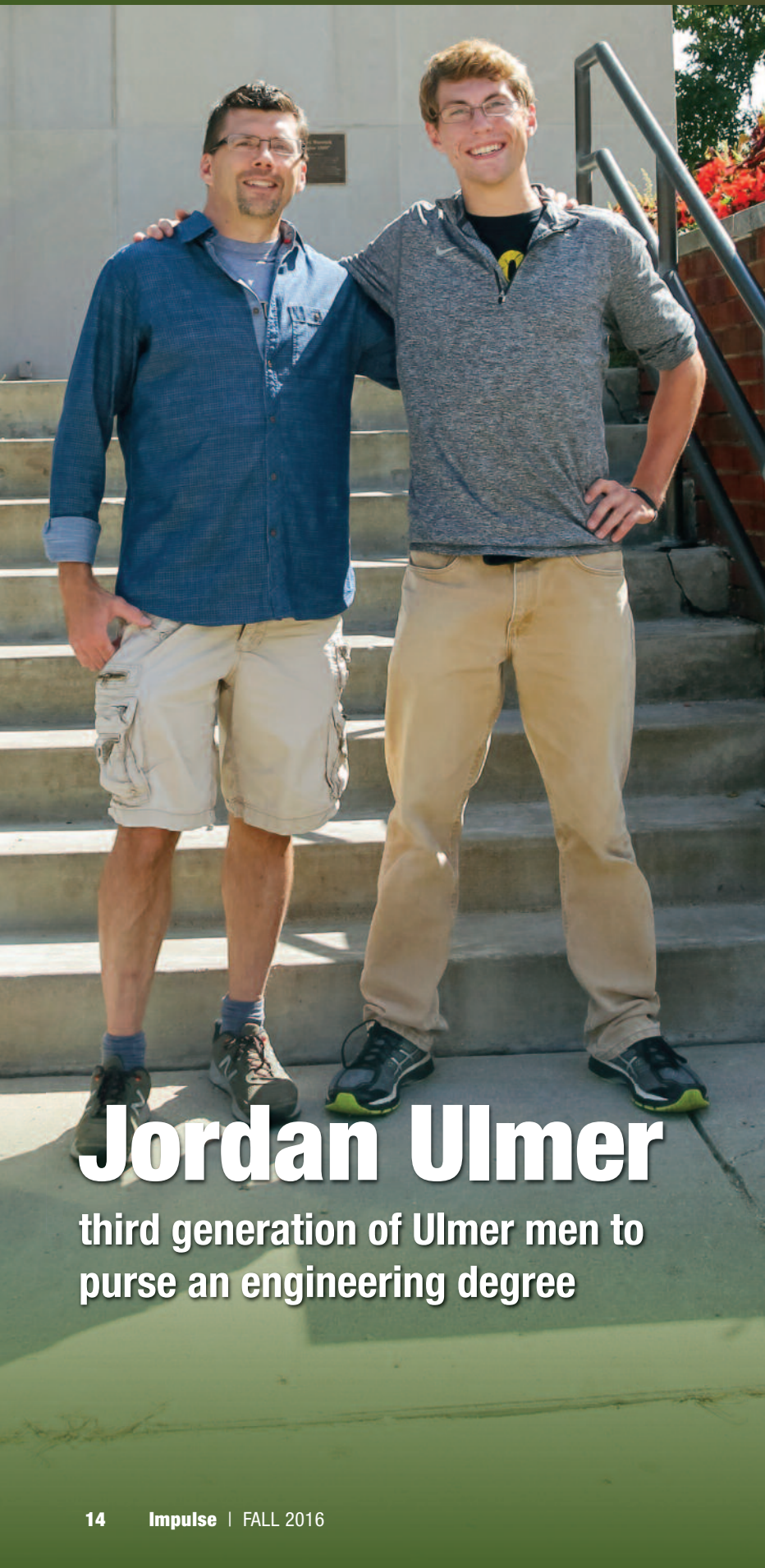
Since 1971, he has been active in real estate development in Palo Alto, California, and Brown said the man who earned his degree 73 years ago remains active in construction management.

The university has seven endowed professorships (including one in civil engineering) as well as an endowed dean. SDSU’s strategic plan calls for growing that number to 16. Earnings from the endowment enhance the salary of the professor and support the professor’s scholarly activities as well as bringing prestige to the university.

Hohbach couldn’t attend the Oct. 21 investiture because of health reasons, but was represented by his cousin, Doug Miller of Brookings.

Assembling after the close of the Hohbach investiture ceremony Oct. 21 are, from left, Lew Brown, dean of the Jerome J. Lohr College of Engineering; Dave Galipeau, Hohbach professor emeritus; Qiquan Qiao, the newly installed Hohbach faculty member; Steve Hietpas, head of the Department of Electrical Engineering and Computer Science; and Barry Dunn, SDSU president.





# Jordan Ulmer

third generation of Ulmer men to  
pursue an engineering degree

When the third generation of Ulmers earn their engineering degrees from State, Dennis Helder hopes to be with them to celebrate. Jordan Ulmer plans to graduate in May 2017, joining his father, Karl '90, and grandfather, Ewald '60, in the family line of State graduates.

Helder, now the Jerome J. Lohr College of Engineering's associate dean for research and a distinguished professor of electrical engineering, was pursuing bachelor degrees in animal science and electrical engineering when he worked at what is now Terex Bid-Well in Canton where Ewald was the CEO.

Then, when Helder completed his master's degree, he started as an instructor at State and one of his early students was Karl.

"I knew Ewald indirectly as I was on the assembly line and interacted with him once or twice," Helder said. "A little while later, I'm teaching Karl. I got to know Karl pretty well. When he and Gretchen '90 (nursing) got married, we were at the wedding. We kept in contact and watched the family grow. One day Jordan pops in and now we're at three generations."

That day was in December 2010 when Jordan came for a campus visit as a high school junior. Helder was one of three faculty members to give him a tour that day.

"When I found out Jordan was Karl's son, I was ... Oh my goodness, I'm teaching my students' children; what does that mean?" said Helder, who was named by both Karl and Jordan as one of their favorites on campus.

## Ulmer legacy

The engineering bug started with Ewald, who said he was blessed to go to college, a belief that has carried over to his children and grandchildren.

Ewald has seen his children Jeff '86, Karl '90 and Jane '94 graduate from State and plans to see a grandson, Jordan, walk across the commencement stage in May 2017.

"My father went through eight grades in seven years but never had a chance to go to college. I certainly was blessed to go to college," Ewald said. "Tuition was very reasonable—\$81 for the entire year no matter how many courses you took."

Despite the reasonable tuition, Ewald said the impetus for him attending State was simple—the Jerome J. Lohr College of Engineering.

"I didn't know anyone else who taught engineering and that's what I wanted to do," said Ewald, noting his engineering career took him to Pratt and Whitney in East Hartford, Connecticut, for seven years before

returning to his home state to work at Raven Industries and Bid-Well.

While raising the family, Ewald brought them to Brookings for engineering week.

"Karl was one of those who benefited from seeing the displays and experiments that were going on at that time," Ewald said. "I was pleased to see his interest and the fact that South Dakota State was attractive to him ... and now is to Jordan, too. I'm awful proud of that."

### Scouting State

Despite the personal tours from George Hamer, Steve Hietpas and Helder as a high school student, Jordan's arrival at State came after spending one year at Kirkwood Community College in Cedar Rapids, Iowa.

"I came to scout out SDSU. I was looking for people to learn from and evidence of industry standard resources to learn with—needless to say, I wasn't disappointed. The small class sizes and friendliness of the faculty I met on my first visit made it clear that I would be able to learn from the professors like Dr. Helder as well as the textbooks," Jordan said. "And second, the new Daktronics Engineering Hall was just in the process of being built, and in it Dr. Hietpas exhibited evidence that electronics labs and technology were a centric part of the electrical engineering curriculum."

"I explored several majors, but I believe that mechanical engineering and electrical engineering are the two fundamental fields that really make things happen," Jordan continued. "Mechanical engineers design the chassis, engine, struts and bearings in your car, while the electrical engineers develop the radio that communicates between ground units, satellites and other airborne contacts—these are the type of processes and products I wanted to work with. I chose electrical engineering because I want to become proficient in the digital realm, and I want to drive change using the critical-thinking skills and the top-notch tools from the experience that SDSU has provided me with."

After graduation, Jordan will work in systems engineering development and design at Rockwell Collins, an avionics communication and navigation solutions firm headquartered in Cedar Rapids. He has worked as an intern at Rockwell Collins since his junior year of high school.

### Asking questions

Jordan said his curiosity in wanting to really understand the 'why' of things and fondness for asking questions has helped him pursue his degree in engineering. He claims working at the SDSU Image Processing Laboratory and being a member of the Van D. and Barbara B. Fishback Honors College has shown him what he's described as "the best of SDSU."

"He's a very intense student, wants to know everything and get everything right," said Dan Kemp, a professor in the Department of Mathematics and Statistics. "Jordan is always going to be curious about whatever he does—sometimes that works against him because he gets so interested in what's beyond what he's supposed to be learning that he forgets to practice what he's supposed to be doing. However, curiosity is a great thing in a student and an employee. You want people to follow up on things."

That curiosity is most likely inherited from Karl, who remembers learning how things worked with Lincoln Logs, Erector sets and eventually a 16-bit TI-99/4A computer.

"That was the launching point of my interest in all things electronic. I remember working out a deal with our high school librarian during the weekends and summer months of my freshman year where I would arrive early in the morning and crawl through a small unlocked window of the library to program one of the three Apple II+ computers all day long



and sometimes into the night," Karl said. "I also remember taking tours of the SDSU engineering campus where concrete canoes built by students were displayed. These all impacted my choice to become an engineer."

Karl has worked at Rockwell Collins for 23 years, now responsible for design and performance of radio navigation equipment used by the U.S. military.

"Working on products that help our soldiers accomplish their task and come home safely is a rewarding experience," he said.

It's rewarding, too, to see Jordan complete his engineering degree at State.

"It's both exciting and surreal to go back to SDSU and walk the engineering building halls and campus sidewalks with Jordan as he pursues his own dream," Karl said. "Although the campus has grown and some new buildings and modern equipment are present, I was excited to see some of my favorite professors like Dr. Dennis Helder still working to make SDSU a great place to obtain an engineering education."

"The smaller class sizes available in the engineering courses still provide a great opportunity for students to get to know the instructors and learn on a more personal level than what is available at larger engineering institutions. That's something I really valued from my time at SDSU."

*Matt Schmidt*

Opposite: Karl '90 joins his son, Jordan, on the steps of Crothers Engineering Hall before helping Jordan move back to campus.

Top: Jordan, Ewald '60 and Karl '90 are joined by Matthew, a seventh-grader.



A high-angle photograph shows three people working with large white PVC pipes inside a concrete structure, possibly a water treatment tank. One person in a white shirt and grey pants is on the left, another in a white tank top and blue jeans is in the center, and a third in a pink shirt and khaki pants is on the right. They are assembling or connecting the pipes. The scene is brightly lit, casting shadows on the concrete floor.

# Engineers Without Borders

Chapter makes  
three summer  
trips to work in  
Bolivia project





Opposite: Drain piping is installed for the lower campus sand-filtration unit at Unidad Academica Campesina in Carmen Pampa, Bolivia, in August. A total of eight SDSU students made three trips to the mountainous region in June, July and August 2016.

Top: Members of the August Engineers Without Borders trip pose on the campus of Unidad Academica Campesina. Pictured, from left, are: Kyungnan Min, SDSU civil engineering instructor; Deidre Beck, a May civil engineering graduate from SDSU who is spending a year in Carmen Pampa; Kayla Ursanowski, a Fairfield University student; Emily Barr, Fairfield; Bruce Berdanier, head of the School of Engineering at Fairfield and the former head of civil engineering at SDSU; Kathryn Higgins, Fairfield; Christina Ficaro, of Fairfield; Kacper Loska, Fairfield; Sunghyeok Choi, SDSU; and Seth Ireland, SDSU.



Bottom: Participating in the July Engineers Without Borders trip are, from left: Callie Sleep, SDSU; Adam Schleper, SDSU; Brad Wermers, Banner Associates, Brookings; Luis Duque, SDSU; David Laporte, Colorado School of Mines; and Deidre Beck, a May SDSU graduate who is spending a year in Carmen Pampa as a volunteer coordinator.

Utilizing persistence, planning and plumbing know-how, the student chapter of Engineers Without Borders at SDSU is nearing the end of a project begun in 2009.

The aim is to bring clean water to Carmen Pampa, a rural, mountainous village in west-central Bolivia. It also is home to Unidad Academica Campesina, “the united college for the peasant,” a branch university of the Catholic University in Bolivia. The school’s director was Hugh Smeltekop, who was named a Distinguished Alumnus in 2013. He is now executive director of the Carmen Pampa Fund.

One water tank serves the lower campus and the community while another storage tank serves the upper campus, about 1,000 people all told.

The community’s water source is a waterfall that is gravity fed from the rainforest to Carmen Pampa. Previously, the water running off the Andes would collect soil and other organic compounds

as it passed through fertilized fields and livestock ranges. The water was so yellowish brown it was hard to see into it more than a couple inches. The Engineers Without Borders chapter evaluated the water-supply system and disconnected polluted water-supply sources to solve this problem.

Chlorinators were then installed in separate years on the upper and lower campuses to improve water quality by neutralizing viruses in the water.

However, the chlorinators aren’t effective against bacteria, according to Kyungnan “Karen” Min, an instructor in the Department of Civil and Environmental Engineering and the chapter adviser since 2013. This summer’s plan was to build and put into operation sand filters at both campuses to remove bacteria and the community’s need to boil water.

### A sand filter without sand, for now

Three two-weeklong trips nearly completed the task, but another two-weeklong trip will be required in summer 2017, Min said.

On the lower campus, the sand-filter piping has been installed, but needs to be connected. On the upper campus, the concrete structure is in place and the pipe cut, but it hasn’t been installed. Sand needs to be added at both sites, which each have three independent cells. The larger cells on the lower campus can process 60 gallons per minute while the smaller cells on the upper campus can process 40 gallons per minute.

Getting the right size of sand particles proved to be a challenge during 2016. While the proper grade of sand was located, it was too far from the site to be economical to use, Min said.

### Chapter benefits from working with Beck

Deidre Beck, a May 2016 civil engineering graduate from State, is





spending 2016-17 as the external relations coordinator at Unidad Academica Campesina. Beck, who also has a degree in Spanish, is coordinating outside groups and donors who plan trips to the university. As a student, she made trips to Carmen Pampa in 2012, 2013 and 2014.

Her duties now also include working with a contractor to find a local source of the desired sand, said Min, who traveled to Carmen Pampa in 2014 and in August 2016.

Min said Beck, of Pierre, made a “huge impact” in progressing the project in 2016 by making arrangements for concrete and locating an excavation crew. “This is a really big project ... and she has all the technical background,” Min said. “She could communicate with us and she could communicate with the locals.”

Beck also coordinated the scheduling of Unidad Academica Campesina students in helping with work as a service project, Min said.

Beck said, “It is very different to be here and to transition from the role of an outsider/engineer to being a constituent of the project. It is now my drinking water.

“I had such a great time working with the EWB groups in July and August (she hadn’t arrived in June). They are a great group of students, eager to help and willing to learn. They deal quite well with the many bumps in the road that a project such as this encounters as well as the challenges of daily life here such as leaky roofs and bats in the bathroom.”

### Fairfield partnership continues

Different students made each trip. The total of eight SDSU students worked with a total of eight students from Fairfield University in Connecticut in June and August. Bruce Berdanier was the head of the civil engineering department at State when Engineers Without Borders began working at Carmen Pampa and became dean of the School of Engineering at Fairfield on July 1, 2013.

The schools have partnered on the Carmen Pampa project since 2013. This year, Fairfield was in charge of designing the upper campus sand filter while SDSU designed the lower campus sand filter, Min said.

Callie Sleep and Luis Duque, SDSU students who made the July trip, said the biggest construction challenge was dealing with a different cultural perspective of time. “The contractor said the PVC pipe was to be delivered today. They said today three different times,” Sleep said. The pipe and other construction supplies come from the capital city of La Paz.

While that was only 75 miles away, it “takes three to four hours, if the car doesn’t break down,” Min said. She noted another challenge was the pipe wasn’t consistent. Some ends needed to be sanded to get joints to fit. Some ends needed to be put in a furnace to swell a bit.

While future engineers may not face challenges like that when they’re working a job in the States, there is plenty to be gained from the experience, Duque said. “I’ve been there a couple of





times. The work in Bolivia will really be beneficial for me and make my transition easier” to professional engineering, the Colombia native said.

Beck said, “I believe the EWB project is important on two levels. First, I believe it is an invaluable experience for the students who work on it. Not only do they get a chance to work on a real project with real challenges, setbacks and successes but they are also exposed to different ways of living and are able to expand their own ideas about global citizenry and engineering as a tool for the greater good.

“Secondly, I believe clean water is a basic right and would be immensely beneficial to the community and university in Carmen Pampa. Clean water is an essential part of building a better future for the people here.”

### **Nonengineers have a place, too**

Students don’t have to be an engineering major to be involved in Engineers Without Borders. Sleep is a mathematics and Spanish major.

Also, chapter president Abby Warmblood noted a great deal of work is done stateside. “Student outreach, fundraising, education, design and reports all must be done here. Construction is actually a small portion of what we do,” she said. The plans for each project must be approved by the national Engineers Without Borders office and a post-trip report filed.

Financing for the trips is largely offset by funds from the college and its departments as well as donations received by SDSU Foundation. Students only had to foot \$500 plus visas and immunizations.

The cost of this year’s project was covered by a \$30,000 Rotary International grant, which was sought by Fairfield University, Min said.

She added Carmen Pampa has become more responsive to outside help. “Two years ago, the community didn’t want to get involved because they didn’t trust chlorinators. Now, they’re excited about sand filters. I hope we can build on that trust and continue working with Carmen Pampa.” One option would be to upgrade its hydroelectric and solar panel system.

Sleep said, “These trips give an appreciation for what we have. We got to experience firsthand their lack of access to clean water.”

*Dave Graves*

Opposite: Workers inspect wood forms for concrete walls of the upper campus sand-filtration unit at the Unidad Academica Campesina. When operational, each cell can process 40 gallons of water per minute.

Center spread: Workers put rebar in place for a concrete slab being laid at the site of a sand-filtration unit on the upper campus. Note the concrete mixer and sheet metal chute at the top of the photo.

Above: PVC piping is cut to make connections on the lower campus chlorinator in July 2016. Engineers Without Borders has been working with the school since 2009.



# BECK

## cousins bond at State



This year, Deidre is in Carmen Pampa, Bolivia, working as the external relations coordinator at the Unidad Academica Campesina de Carmen Pampa while Deryn and Brittany remain at State. Deryn is pursuing a master's in civil engineering.

Deryn foresees a career in water resources before joining the family business, a concrete construction and land development company. Brittany has career interests in two divergent areas of mechanical

engineering—biomedical or heating, ventilating and air conditioning.

Deidre's position in Carmen Pampa ends in July 2017. "I want to work as a civil engineer in the field of water/wastewater engineering. I would especially like to work on implementing more sustainable, environmentally friendly infrastructure."

She has gained a taste for that through her involvement in Engineers Without Borders. She made three trips with the SDSU chapter to Carmen Pampa to help in the installation of chlorinators to provide clean water to the rural mountainous community and the university.

Deidre wasn't the first Beck to attend SDSU. Deryn had two older sisters, Dacey, a pharmacy major now in her final year of the six-year program, and Dawn, a 2015 nursing graduate.

### Family influences engineering's draw

Deidre was the first to pursue engineering at State, but she didn't consider herself a pioneer, perhaps because her older sister, Rika Beck, was already enrolled at South Dakota School of Mines.

"I can only speak for myself, but I think I was drawn to a STEM career for several reasons," said Deidre, a 2011 graduate of T.F. Riggs High School in Pierre. "Both of my parents are in agronomy, meaning I grew up in a science-based household."

"In our house, there was never any distinction between what girls and guys could do, maybe in part because my parents were in the same field. I don't even think I thought much about engineering being male-dominated before I decided to major in it."

"Mostly, I think I am very drawn to engineering because of the possibility to work toward a better world by improving the quality of life that people live. It is an exciting, rewarding and impactful field."

Deryn said the influence of the family construction business helped draw her to engineering.

"But I really like math, that's probably the main decider. I worked with my dad. Growing up, a lot of it was just riding around with Dad in trucks and tractors, helping lay forms for concrete and going to get tools. As I got older, I was in sports, so it was easier to just help my mom with bookwork on my own time," said Deryn, a 2012 Riggs graduate.

Brittany, whose senior design project involves prosthetics, said, "I really enjoy putting things together with my hands."

### College days draw cousins closer

First cousins Brittany and Deryn grew up as best friends. Deidre, a second cousin and two years older than Brittany, had a different circle of friends. In college, their bonds grew tighter.

Deidre said, "We got closer in college as we shared more experiences and realized we wanted to pursue similar careers. I especially spent more time with Deryn as we are both in civil engineering and

Efforts to raise the number of females in engineering have budged the needle some, but the field remains primarily of interest to the guys.

At SDSU, the percent of female undergraduates has been in the 12-13 percent range for several years, but one extended Pierre family has ignored the preconceptions about engineering.

Last year, there were three Beck cousins, all females, in the engineering program. Deidre, or DeeDee as her cousins call her, graduated in May 2016 with degrees in civil engineering and Spanish. Deryn also graduated in May 2016 with a degree in civil engineering. Brittany, who spent one semester in civil before switching to mechanical, will graduate in May 2017.

## Beck awarded national engineering scholarship

Deidre Beck became the first SDSU student in recent memory to receive a \$3,500 national scholarship from the civil engineering honor society.

Beck, a Pierre native who graduated in May, was one of 10 recipients of 2016 awards from Chi Epsilon. She was initiated into Chi Epsilon in fall semester 2015 based on her academic and extracurricular activities and became a scholarship recipient for the same reasons.

A 2011 graduate of the T.F. Riggs High School in Pierre, Beck has been active in the American Society of Civil Engineers, Engineers Without Borders and the Society of Women Engineers as well as playing in The Pride of the Dakotas marching band her first three years at State.

In July, Beck started a one-year position in Bolivia through the Princeton in Latin America Fellowship, which matches nonprofits working in Latin America with motivated recent graduates. She was one of 50 graduates chosen for the fellowship, which covers her living expenses in Bolivia.

Beck works as the external relations coordinator at Unidad Academica Campesina de Carmen Pampa, an agricultural university in rural, mountainous east-central Bolivia, which was formerly headed by SDSU Distinguished Alumnus Hugh Smeltekop. Beck, who also majored in Spanish, is coordinating outside groups and donors who plan trips to the university.

Beck is no stranger to Bolivia having traveled to Carmen Pampa in 2012, 2013 and 2014 with the SDSU chapter of Engineers Without Borders. The campus chapter sent small groups there to gather information and install water treatment units for disinfection. One chlorinator was installed in 2012, a second one in 2015 and this summer a group went there to install sand filters. (See separate story Page 16.)

The honor roll student also was part of the concrete canoe team with the American Society of Civil Engineers the past three years.

After serving in Bolivia in 2016-17, she will decide whether to go to grad school or get a job.

Her adviser, professor Francis Ting, said Beck has always been well organized and was "one of the best students I had the privilege to teach. Her leadership and participation in engineering societies and outreach programs highlights her all-around development while maintaining an extremely high scholastic standing."

*Dave Graves*

started to have classes together. We were even in the same capstone/senior design group. She is a great study-buddy and group partner.

"It was great to go through a variety of college experiences with girls who were at once family, high school friends and college classmates."

Deidre and Deryn were both officers in the American Society of Civil Engineers and even got Brittany to go to a few meetings.

Deryn and Brittany have been roommates since their junior and sophomore year, respectively.

Deryn said, "We've had a lot of late-night conversations. She makes a lot of food. I definitely benefit from her cooking. We're pretty much best friends."

Deidre said the best part of the Beck experience at State has been "just having my cousins around through my college experience. Being able to hang out on weekends or seeing them in Crothers, driving home together for the weekend, working together on homework on extracurricular activities, etc."

Next academic year will find only one Beck on campus, but that may be a short-term situation. Deryn has three younger siblings at home.

*Dave Graves*

Brittany Beck, left, and her cousin, Deryn Beck, pose after touring the almost-completed Architecture, Mathematics and Engineering Building in late winter 2015. Brittany is a mechanical engineering major, which is housed in the new building, while Deryn is a civil engineering student.



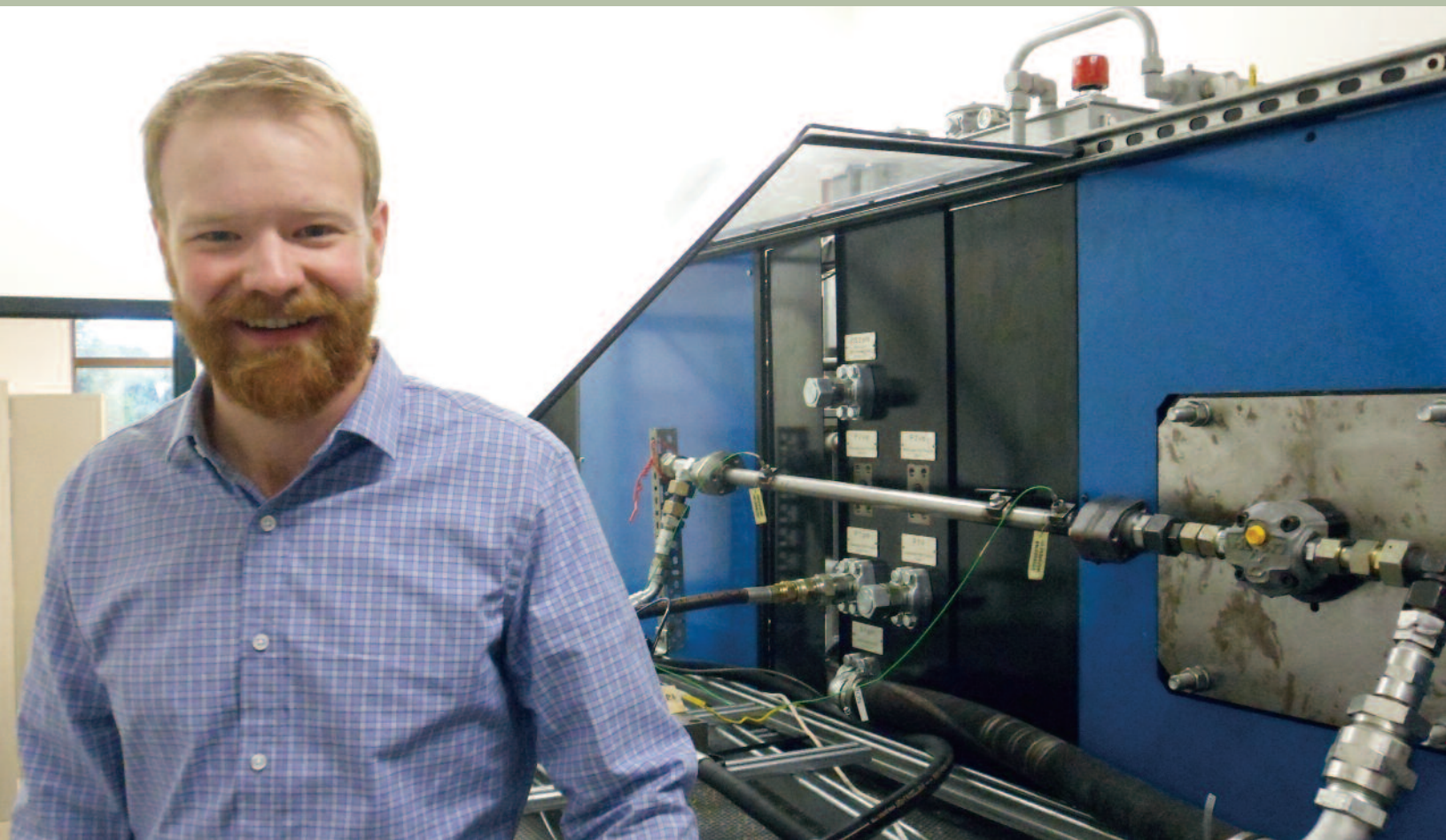
### THE BECKS

- Diedre, or DeeDee, graduated in May 2016 with degrees in civil engineering and Spanish. Now working in Bolivia. Parents: Dwayne and Ruth Beck. Two sisters, who also majored in engineering, though not at SDSU;

- Deryn graduated in May 2016 in civil engineering and is pursuing her master's in civil engineering at SDSU. Parents: Darrell and Deb Beck. Four sisters and two brothers: including Dawn, a December 2015 SDSU graduate in nursing; and Dacey, who is in her final year of pharmacy; and

- Brittany will graduate in May 2017 in mechanical engineering. Parents: Dan and Lori Beck. A brother, who works in the family construction business.





## NSF award

### Robison tabbed for Graduate Research Fellowship

One of science's most prestigious graduate awards has gone to Andrew Robison, a 2014 alumnus of SDSU who majored in mechanical engineering, chemistry and German.

The National Science Foundation's Graduate Research Fellowship is good for \$34,000 per year for any three years within a five-year period plus a \$12,000 cost-of-education allowance. Recipients are considered America's most promising students. "It's a long-term investment in individuals based on their potential," according to Gisele Muller-Parker, director of the Graduate Research Fellowship Program.

Robison is only the third SDSU recipient in the past 15 years. Past selections were Laura Bauberger in 2001 and Caitlin Gerdes in 2013.

Robison, 25, now is in his second year of a five-year bachelor's-to-doctorate program in mechanical engineering at Purdue University.

National Science Foundation makes 2,000 awards annually to "the country's future leaders in fields within

NSF's fields of commission," Muller-Parker said. This year, nearly 17,000 students applied. Robison applied twice. His first application was submitted while in Berlin working for Cru, a Christian student organization, and his career objective was to be a petroleum engineer.

That generated a "thanks for playing letter."

When Robison applied again, it was October 2015. He was a month into graduate school and on a different career track. Oil prices had plummeted while he was overseas so he scrapped the idea of becoming a petroleum engineer and his new plan was "to be involved in cutting-edge research and in training the next generation of engineers," he said.

That NSF was interested in funding, plus Robison had a better idea of his research project and the expectations of graduate mechanical engineering study.

#### To design a better gerotor pump

His project is to create a better design for gerotor pumps, a positive displacement, generator rotor pump

with an internal and external gear. The pump, used in virtually anything that requires a lubrication pump, creates a pumping action as fluid becomes trapped between the two specially shaped gears and then is released as the gears rotate.

"It's used in a lot of low-pressure applications, like fuel, transmissions and charge pumps," explained Robison, a graduate of Orono High School near the Twin Cities.

"When it comes to fluid power, some of the major limitations are noise generation and efficiency. The current gerotor design was developed 75 years ago mostly by trial and error. There's almost certainly a better gear design out there. If you develop a better gerotor design, you could impact about every vehicle in the country," he said.

At Purdue, which has the largest academic fluid power lab in the country, Robison is working with professor Andrea Vacca, a world expert in hydraulic pumps.

### **Schooling: Smaller is better**

Robison is grateful to be able to get his graduate education at a major research university like Purdue, but is even more thankful he got his undergraduate degree at SDSU.

"I would have not been awarded this fellowship had I gone to a larger university for my undergrad. At SDSU I received a lot of individual attention and got to know my professors on a personal level. Had I gone to a big university, I would have been just a number.

"I was really happy with the small classes. I thought they were taught really well by professors who cared a lot," Robison said.

In his second application for the Graduate Research Fellowship, he was assisted by his adviser at Purdue as well as SDSU mechanical engineering faculty members Greg Michna and Todd Letcher.

Then on March 29—his 25th birthday—Robison got a notice from the National Science Foundation that made the day unforgettable.

*Dave Graves*

Andrew Robison, a 2014 triple major graduate from SDSU, poses by a work bench in the Fluid Power Research Center at Purdue University. This spring he received notice that he had been awarded a \$34,000 per year fellowship from the National Science Foundation.

## Civil major receives second **Space Grant** award

Emily Meerdink didn't need a scholarship from the South Dakota Space Grant Consortium to advance her interest in all things STEM, but she's happy to receive it.

Meerdink, who has compiled a 4.0 GPA as a civil engineering major, received a \$1,300 award in 2015-16 and a \$2,500 award for 2016-17. The awards are designed to attract underrepresented populations, primarily ethnic minorities and women, into the disciplines of science, technology, engineering and mathematics.

Meerdink, from Akron, Iowa, has known from an early age that she wanted to pursue an engineering career.

"My father is a high school science teacher and my mom is a nurse. In high school (Akron-Westfield) we have a science weekend where we do soil and water testing and surveying. It's heavy in math and science. That's what I love to do," Meerdink said.

She went on the trip her sophomore, junior and senior years, when she also started doing independent science projects.

"I love the environment. I'm very passionate about it," the current SDSU junior said.

She will be able to apply for the Space Grant Consortium funds again as a senior. Selection is based largely on academic record and campus involvement. Meerdink is recruitment officer with the SDSU chapter of the American Society of Civil Engineers and is secretary of both the chapters of the Society of Women Engineers and the American Water Works Association-Water and Environment Federation.

Meerdink wants a career in water and wastewater engineering.

Toward that aim, she spent summer 2016 working at DGR Engineering in Rock Rapids, Iowa, where her major project was to create a GIS map of the city of Rock Valley water lines, water valves and hydrants.

Meerdink also is a recipient of the Sundstrom Scholarship, a \$5,000 per year renewable award that she received through the university's scholarship weekend for incoming freshmen.

She was aware of the Space Grant funding while she was still in high school because her two older sisters received the Space Grant award from the Iowa consortium. Susan and Becca were students at Iowa State and Northern Iowa, respectively, but Meerdink didn't want to follow their path.

"SDSU is really a great school for engineering. I have had a ton of opportunities and have really enjoyed my stay at State," she said.

*Dave Graves*







# LINK MANUFACTURING Scholarship

Borchardt, Marks receive first Link Manufacturing scholarships

Despite a longtime connection to South Dakota State University, it took some time for Jim Huls to think of creating a scholarship for students of the Jerome J. Lohr College of Engineering.

Huls, now the executive vice president and chief operating officer at Link Manufacturing in Sioux Center, Iowa, graduated with a bachelor's degree in mechanical engineering from State in 1990 so he has firsthand knowledge of the value in an SDSU education.

Link, a privately owned firm, has sponsored a scholarship locally at Dordt College but felt a need to expand its recruiting base. And Huls knew just where to look.

"We have a need for a lot of engineers so we are regularly adding to our staff," Huls said, noting Link produces highly engineered products for commercial vehicles. "SDSU fit a lot of the criteria we have for finding the right engineers. I know SDSU has a great reputation in the region, if not the country."

Receiving the first Link Manufacturing scholarships are Alex Marks of Marshall, Minnesota, and Dillon Borchardt of Elk Point.

"Being one of the first to receive the scholarship just adds to the excitement factor of getting a scholarship. Even though I've always been dedicated to doing well in school because I know how valuable those good grades are, the scholarship is definitely a motivation booster," Marks said. "For some it is difficult to see the long-term effects of

# 2017 Phonathon



doing well academically, but getting a scholarship gives a smaller immediate reward. The fact that Link Manufacturing is related to the field that I would like to pursue made me look into their company more and think about them as a possible aspect of my future career. My end goal is to end up somewhere in automotive engineering.”

“It really means a lot. I think it shows a lot about a company when it gives back to students,” Borchardt said. “To me, it shows that Link cares about the future of engineering, and it really makes them stand out as a desirable company to work for.”

Those are just the answers Huls wanted to hear when creating the scholarships. While Link has hired four graduates and several Jackrabbits as interns recently, Huls would like to see the relationship create more internship possibilities and potential full-time employment. Link has 30 engineers among its 200 employees.

“We want to meet and get to know the students who receive the scholarships,” continued Huls, who will continue recruiting efforts through various on-campus events. “We will be sending leadership to the ASME school function to talk about the field and what we do. In our business, just in general, our country has a great need for technical people, including mechanical engineers. We want to support that need through incentivizing people to enter the field.”

Kurt Bassett, who serves as the department head for mechanical engineering, said Link’s approach is not something new but is something that is needed.

“We have a lot of good students, there a lot of people to choose from for scholarships like these,” he said. “We don’t have scholarships to cover everyone eligible. One of the good things about the scholarship is that it provides us an opportunity to reward those students who are doing well, participating in the

professional activities and areas that are going to advance their careers.”

In addition, the scholarships have provided another opportunity for the college to further develop its industry relationships.

“I was there in July to get a better understanding of the products they make and what engineers work on there,” Bassett said. “There is a lot of additional interaction and visibility of Link to our students, not just through the scholarship but also through the other interactions we’ve had. I think it has a lot of advantages beyond providing financial support for students.

“We have the career fairs twice a year but there are a lot of companies in attendance and as a result, students might not know where to focus, what companies do and what companies they might want to work for,” he continued. “By having these other points of contact, in addition to the career fair, it gives the students other opportunities to learn and investigate these companies, where they are and what they do.”

Which is what Borchardt plans to do while receiving the scholarship.

“This is an opportunity to get to know the company and look for future internship opportunities and/or employment,” he said. “I would feel much more inclined to work for a company that has helped me out in the past than one that doesn’t do much for students. After I graduate, I hope to find a job around this area in mechanical engineering. I want to work for a few years and get some experience, and then possibly go back to school and get my master’s.”

*Matt Schmidt*

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Scholarship donor Jim Huls, of Link Manufacturing, Sioux Center, Iowa, is flanked by recipients Dillon Borchardt, of Elk Point, left, and Alex Marks, of Marshall, Minnesota.

*Starts Jan. 16, 2017*

*Thank you for taking our call and supporting us.*



**SOUTH DAKOTA STATE UNIVERSITY**

**Jerome J. Lohr College of Engineering**



# Legion of Valor award

Jorgensen first SDSU cadet to receive Legion of Valor



Cole Jorgensen, a junior mechanical engineering major from Hartford, has become the first U.S. Air Force ROTC cadet at SDSU to earn the prestigious Legion of Valor Bronze Cross for Achievement.

The Legion of Valor, an association of those whose valor has been recognized with the Medal of Honor, the Distinguished Service Cross, Navy Cross or Air Force Cross, recognizes outstanding Air Force ROTC cadets by awarding the Legion of Valor Bronze Cross for Achievement.

Jorgensen is one of only four Air Force ROTC cadets in the nation to receive the award. The award recognizes one outstanding incoming senior cadet in each Air Force ROTC region who has demonstrated excellence in military and academic performance.

Each nominee must be in the upper 10 percent of both the AS 300 class and the school department class ranking and possess demonstrated outstanding leadership qualities. There are 34 detachments in the Northwest Region to which SDSU belongs.

Jorgensen, a 2013 West Central High School graduate, carries a 3.6 GPA. During field training in summer 2015, he was named the distinguished graduate for his flight and he has received leadership awards throughout his three years in ROTC as well as scoring above 98 percent in his physical fitness testing.

The award symbolizing all-around achievement was presented Sept. 1 in front of the entire cadet wing at the first leadership lab of the school year by Lt. Col. Craig McCuin, commander for Detachment 780.

"I was very humbled. I feel I am following the example that cadets set before me and I'm hoping I can do the same for other students," Jorgensen said.

Todd Letcher, an assistant professor in mechanical engineering, said, "It's no surprise that Cole was honored with this award. He has shown extreme dedication to his mechanical engineering courses and always works as hard as possible."

Jorgensen said his academic motivation "goes back to the way my mom raised me—doing the best you can do. I still call her after tests. She is always upset if I didn't study as hard as I could have."

Eventually he hopes to call his mom with news that he got a pilot slot. But that is a ways off. He doesn't graduate until May 2018.

McCuin called Jorgensen "a first-class leader in the university, community and cadet wing. Cole continues to develop himself through self-discipline and hard work and ensures his peers are improving as well in their studies and in the cadet wing. He is going to be a superb Air Force officer upon graduating from SDSU."

*Dave Graves*

Cole Jorgensen, left, receives the Legion of Valor Bronze Cross for Achievement from his commander, Lt. Col. Craig McCuin. The U.S. Air Force ROTC cadet at South Dakota State University is one of only four nationwide to receive the honor.



## Image Processing Lab an 'Act of Excellence'

South Dakota Hall of Fame sent word on July 14 that the work of the Image Processing Lab in the Jerome J. Lohr College of Engineering is a verifiable Act of Excellence.

The mission of the South Dakota Hall of Fame is "Championing a Culture of Excellence in South Dakota" and considered the lab, as detailed by director Dennis Helder, to be a "Champion of Excellence in South Dakota."

The lab dates to 1990 when Helder, then assistant professor of electrical engineering at SDSU, founded the SDSU Image Processing Laboratory (IP Lab) with a single Sun workstation and a graduate student.

His submission to the South Dakota Hall of Fame goes on to say, "Initially, and currently, supported by the USGS EROS Center, the focus of the laboratory has been to develop algorithms to improve the performance of optical remote sensing satellites.

"Since that modest beginning, the lab has grown to an average of 12 students and staff members and is known nationally and internationally as one of the leading groups in the world for radiometric, geometric and spatial characterization and

calibration of optical remote sensing satellites.

"Although that sounds like a mouthful, basically it means they make sure the pixels have the right value and are in the right positions within a satellite image.

"As an example of how this affects the general public, virtually all the imagery in the popular Google Earth and Maps applications has been calibrated by the SDSU Image Processing Laboratory.

"From a more scientific perspective, the IP Lab has provided the calibration necessary for scientists around the world to use the imagery from a variety of satellites to study a wide variety of climatological issues—from rice production in Asia, to deforestation in Brazil, to drought in Africa as well as forest fires, volcanoes, ocean temperature and a hundred other climate variables across the planet," Helder wrote.

"The IP Lab has worked with sensors from all over the world. Perhaps the most famous is the Landsat series of sensors whose images are archived at USGS EROS and the MODIS sensors developed by NASA.

"Other sensors include SSTL systems from Great Britain, Sentinel 2 from the

European Space Agency, RapidEye sensors from Germany, Thaichote from Thailand, and also other US satellites flown by private companies such as Digital Globe and Planet Labs.

"The SDSU IP Lab is known worldwide for innovative developments to radiometrically calibrate imaging satellites while on orbit.

"For example, there are several research groups around the world that perform vicarious calibration at desert sites. SDSU's IP Lab is the only group that performs the same calibration at a vegetative site near Brookings. This approach is much more difficult due to a darker target and a more difficult atmosphere to model, but the results are more valuable because of the high interest in analyzing vegetated targets around the world," Helder wrote.

"The IP Lab has also developed advanced methods for using deserts as calibration sites without deploying any instrumentation and yet being able to perform absolute calibration of satellites.

"Finally, the IP Lab developed the most widely used approach to measure how much blur is in a satellite image and it is now used for almost all satellite sensors.

"As evidence of the contributions made to the field of satellite calibration, the SDSU IP Lab has obtained two group achievement awards from NASA and an additional group achievement award from the USGS (EROS). In addition, the laboratory director, Dennis Helder, has received the John Wesley Powell award from the USGS, which is the highest civilian award granted by that agency.

"In summary, the SDSU Image Processing Laboratory is a world-renowned facility that has made significant contributions to the calibration of remote sensing satellites since 1990. It is a leader in this field of research and its impact has provided massive amounts of satellite image data for science as well as more useful imagery for the public."

*Dave Graves*

All the world is in view for Dennis Helder, director of the Image Processing Lab at SDSU. The work of the lab in improving the performance of optical remote sensing satellites has been deemed an "Act of Excellence" by the South Dakota Hall of Fame.



## Faculty notes

**Susan Goens**, 63, who retired June 21, 2015, as senior secretary in the Department of Agricultural and Biosystems Engineering, died July 12, 2016, at her Brookings home after a battle with cancer.

She spent 26 years with the department, the first six being a clerk in the weather office. Career honors include being named Career Service Employee of the Month in March 2000, receiving the Women of Distinction Award in Career Service in April 2006 and gaining the honorary service award from Gamma Sigma Delta, the agricultural honor society, in 2015.

Survivors include her husband, Rollie, four children, three grandchildren, two step-grandchildren, a sister, five half-sisters and four half-brothers.

**Cedric Neumann**, an assistant professor in mathematics, was included in National Geographic's July 2016 cover story: "The Real CSI, the New Science of Solving Crime."

The lengthy article states "Cedric Neumann, a professor of statistics at South Dakota State University who specializes in fingerprints, is one of those arguing for a better way for analysts to express the uncertainty in their results. Neumann and others also hope to develop a more objective way to look at the loops, arches and whorls used to compare fingerprints."

There are about 25 statisticians worldwide working in forensics science. Neumann and colleague Chris Saunders are two of those and have received a \$780,300 grant to advance the science. They received the three-year grant from the National Institute of Justice in September 2014.

**Jon Puetz**, program director of Engineering Extension, received the William J. Higgins Award at the 41st annual OSHA On-site Consultation Training Conference in Kansas City in May. The national award recognizes safety excellence in the small business community. Puetz was cited for his work in occupational safety and health as well his commitment to the small business community.

The Special Interest Group on Applied Computing has awarded **Sung Shin**, a professor in the computer science program, its outstanding service award for its work within the organization, including service on its executive committee.

He is the immediate past chair, heading the group from 2009 to 2015, and received its Distinguished Service Award in 2010. The organization is an affiliate of the Association for Computer Machinery.

**Louis Skubic**, professor emeritus of general engineering, and his wife, Mary Ann, celebrated 70 years of marriage with a gathering July 3 at St. Thomas More Catholic Church. The couple was married June 1, 1946, in Chicago as he awaited discharge from the Navy. He taught at SDSU from 1954 to 1985. They remain active in the Brookings community.

**Dennis Today**, SDSU Extension/state climatologist and an associate professor in ag and bio systems engineering, began work as the director of the USDA Midwest Climate Hub at Ames, Iowa, in July. He had been at SDSU since January 2003.



### JEROME J. LOHR COLLEGE OF ENGINEERING

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# Board of Regents approve Master of Engineering

The South Dakota Board of Regents recently approved several new programs for the Jerome J. Lohr College of Engineering. The SDBOR approved a Master of Engineering degree, an engineering graphics certificate and an associate degree.

## Master of Engineering degree

The Master of Engineering degree focuses on coursework over the more traditional research track and is designed for engineers employed in or preparing to enter technical management roles in business and industry. The college projects 21 graduates each year.

"The Master of Engineering degree is geared toward working professionals and students who will graduate in December or May and want to stay one more year to earn a graduate degree. This should tee up their careers very nicely for future advancement," Teresa Hall said. Hall, department head for the college's Department of Construction and Operations Management, is overseeing the degree program.

"Right now, we're only admitting degreed

engineers. It's a really nice way for someone to do a master's degree and not quit their day job," Hall continued, noting the program will be fully online in three years. "This program's core has classes that will enhance management and leadership skills while the other 15 credits provide technical depth in the discipline. It is a true capstone to a bachelor's degree in engineering."

## Engineering graphics certificate

The engineering graphics certificate is geared for students seeking industry-specific skill sets. The certificate combines traditional drawing skills with advanced computer-aided design applications. It will provide students a technical credential demonstrating competency in engineering drawing.

The certificate, which is available starting in the fall 2017 semester, should appeal to engineering, technology and design majors who seek industry-specific skills. Nine of the 12 credit hours required for the certificate also fulfill requirements for a bachelor's degree in

operations management. University officials hope this will encourage many certificate completers to continue toward earning their bachelor's degree.

## Manufacturing technology associate degree

Hall said the new two-year manufacturing technology program is a response to industry needs. It will engage students in the technical study of processes, materials, quality and engineering design concepts. This program prepares students for entry-level technical positions in advanced manufacturing and its supply chain. Along the way, graduates of this program will have fulfilled the first 60 credit hours of the SDSU bachelor's degree in operations management.

"This program fills that niche but also allows one to see if they want to keep going and earn a Bachelor of Science in operations management," Hall said.

## Iowa Resident Tuition Program at South Dakota State University

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Phone: 1-800-952-3541



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## Retirements

### DAVID AARON



David Aaron, an assistant professor in the physics department, retired in June after 23 years at SDSU.

In addition to teaching, he undertook joint research with the

Image Processing Lab.

Aaron taught thousands of undergraduate students in basic physics courses for physics and engineering majors. He said his core belief was that solving physics problems was a logical, methodical, documentable process that, once learned, students in all professions could succeed in their chosen careers by applying this same basic approach to problems within their field.

As for research, he worked in many areas but his primary area from 2002 on was in working with the Image Processing Lab.

His team there focused on developing and using ground-based vicarious calibration techniques to perform on-orbit calibration of satellite-based sensors. Funded work with NASA, USGS and numerous other private and governmental entities has established SDSU as one of the top four calibration teams in the U.S. and well within the top 10 internationally.

Aaron said he also is proud of the opportunities and training provided to a large number of undergraduate and graduate students who have moved onto successful careers in remote sensing and other fields.

### Raised on Arlington farm

Aaron was born and raised on a family farm near Arlington and followed his father's footsteps to SDSU (Paul '43, mechanical engineering). The younger Aaron graduated from SDSU's engineering physics program in 1975.

"I am extremely thankful for the education and personal support provided by SDSU's physics and engineering departments of the time. The professors and staff were an amazing bunch of individuals who I have sought to emulate as a professor," Aaron said.

After graduating from SDSU, he worked for several years as an electrical design engineer at IBM and then went to graduate school at the University of Wisconsin-Madison in materials science.

He then worked several years at McDonnell Douglas in St. Louis on very high-power semiconductor lasers. In 1992, he and his wife, Virginia Conger, decided that Brookings would be a much better place to bring up their young daughter, Zoe, so he took a position in the SDSU physics department.

In 1993 they had a son, Michael, to complete their family. Since the mid-1990s, his wife has worked for and now manages a biomedical devices manufacturing plant in Clear Lake.

### Rest not yet part of retirement

Retirement doesn't promise much slow down for Aaron.

For now, he is continuing work with the research group and is teaching a couple of days a week.

Beyond that, he has numerous large projects that were deferred for years. The immediate family farm along with property homesteaded by his great uncle, not to mention another longtime family property in Arlington, are owned by Aaron and his three siblings.

"There is somewhat near an infinite amount of work that needs to be undertaken on all of these. In addition, our home in Brookings is a 1907 house, and we own a cabin on Lake Poinsett. Thus things as simple as keeping lawns mowed help keep me from worrying about boredom," Aaron said.

Also, with Zoe working in the theatrical, costume industry in New York City and Michael a computer scientist at Google in Boulder, Colorado, plus a mother-in-law in Tennessee, traveling is a regular activity.

"Also, years ago, I worked with Brookings Habitat for Humanity and would like to become active there again along with perhaps actually getting around to going fishing at my cabin at least once," Aaron said.

### DAN HUMBURG



Dan Humburg, a professor in agricultural and biosystems engineering, retired May 21 after 25 years at SDSU. Among his academic interests were precision agriculture,

bioenergy and sustainable technology and power, and machinery applications.

Humburg, a 58-year-old native of Blue Earth, Minnesota, earned his bachelor's degree in agriculture from the University of Wisconsin-River Falls in 1982. He added a master's in agricultural engineering from SDSU in 1987 and a doctorate in agricultural engineering from

the University of Illinois at Urbana-Champaign in 1991.

Humburg also spent two years as an ag loan officer at Lake Crystal (Minn.) National Bank in 1982-84.

He was chosen as Academic Advisor of the Year in 2009-10 by the dean and his management team and was active in the American Society of Agricultural Engineers.

Humburg and his wife, Carol, a nursing supervisor in student health at SDSU, have two sons—Jacob and Joshua.

Both are SDSU engineering graduates. Jacob graduated from the civil and environmental engineering department and went on to earn his master's in 2015. He works for Bolton & Menk in Burnsville, Minn.

Younger son Joshua is a 2014 graduate of the mechanical engineering department and is an engineer at the Big Stone power plant near Milbank as well as a second lieutenant in the U.S. Marine Corps Reserve.

Though retired from the university, Humburg is nowhere near retired.

"I am working on the commercialization of a patented system to protect combines from catching fire while harvesting sunflowers. I also continue to work with students as a part of a funded research project involving use of abrasive grits propelled by compressed air to kill weeds in organically grown crops.

"Between those and trying to clean my shop, I'm busy," Humburg said.



## Dakota Return Child of Alumni Program

Children of nonresident South Dakota State University alumni may be able to enroll at SDSU and pay in-state tuition and fees under the new **Dakota Return** Child of Alumni Program.

### To Qualify:

- Incoming freshmen must score a 20 or higher composite score on the ACT (930 SAT).
- New transfer students must have a 2.5 cumulative transfer GPA.
- One of the parents or legal guardians must have graduated from SDSU with an associate, bachelor's, master's or doctoral degree.

To receive further information about the new program contact the Director of Admissions, Tracy Welsh, at 1-800-952-3541.



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**The prospective student is:**

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High School Attending	Grad. Year	

**Comments about the student:**

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**Mail To:** Ms. Tracy Welsh, Director of Admissions  
South Dakota State University  
Box 511  
Brookings, SD 57007



# Knofczynski Scholarship

## Former students donate in remembrance of 'Kaa-nof'

**M**echanical engineering students who succeeded in Clayton Knofczynski's thermodynamics class between 1958 and 1990 have an SDSU recruiter to thank.

Knofczynski was 28 and working on the family farm near Ivanhoe, Minnesota, in 1954 when his brother, Richard, received a visit from Jim Peterson of South Dakota State College. After he visited with Richard, who was also interested in playing football at State, and parents Walter and Petranellia Knofczynski, Peterson walked out to his car and found Clayton there waiting for him.

He had a simple question: "Is it too late for me to go to school?"

Of course, the answer was "no" and in fall 1954 Clayton made the short drive across the state line and became a Jackrabbit; not a Jackrabbits football player, but a Jackrabbits engineer.

The high school valedictorian had wanted to go to college, but was held back by financial concerns and, as the oldest of six children, was expected to help on the farm, Knofczynski's wife, Audrey, said.

When he did go to college, he paid the bills by borrowing money from his oldest sister, who had already gone to college, Audrey said.

### First joined faculty in '58

Once at State, Knofczynski quickly shook off any academic rust. As a freshman, he received the Sigma Tau Award for the being the highest-ranking engineering freshman. He earned his bachelor's degree in mechanical engineering in 1958 and so impressed the faculty that he received an offer to join them immediately after graduation.

Thus began a career that would total 30 years on staff and make him the most beloved mechanical engineering instructor of that era.

Knofczynski taught from 1958 to 1965, when he earned his master's degree in mechanical engineering. He worked in



In this picture from the 1970s, Clayton Knofczynski grades papers at his desk in Crothers Engineering Hall. He taught a total of 30 years and a scholarship has been created in the memory of the late mechanical engineering professor.

private industry for three years and in 1968 returned to campus, where he served until 1990, including one year (1977-78) as department head.

In retirement, Knofczynski put his energy into gardening and woodworking and went on many tour bus trips with his wife. He also maintained an interest in the department throughout his life, which ended Oct. 28, 2015, at age 89. Memorials have since poured into the Clayton and Audrey Knofczynski Scholarship at the SDSU Foundation.

### Scholarship dates to 2008

"The amount of money coming into the scholarship is a true testament for what (former students) thought of him," according to his daughter, Mary Bowne.

Mechanical Engineering Department Head Kurt Bassett helped Knofczynski set up the scholarship in 2008 with

Knofczynski and family members making initial contributions. At the time of his death, the fund stood at less than \$15,000, not enough to generate the money needed to fund a scholarship, Bassett said.

In February, the mechanical engineering department took on the project of lifting the funds to \$75,000 in order to award three \$1,000 scholarships annually.

Letters were sent to his former students and the fund now stands at \$60,000.

"We've gotten more than 75 pledges or gifts from folks who weren't contributing before, primarily from former students and also from some classmates," according to Ned Gavlick, development officer for the Jerome J. Lohr College of Engineering with the SDSU Foundation.

### 'Such a great professor'

Lew Brown, dean of the college, isn't surprised by the outpouring.

"He was such a great professor. He really made an impression on me," said Brown, a 1984 electrical engineering graduate who took Knofczynski for only one class—thermodynamics, "Kaa-nof's" specialty.

"All electricals and almost all ag engineers had professor Knofczynski for thermodynamics," Brown said. "It was considered by electrical engineers as a real scary course. It's like trying to teach electrical engineering to a mechanical engineer. It frightened a lot of students. But he had an ability to speak at our students' level about complex concepts.

"Even though I was told I would hate thermodynamics, I enjoyed it. We all sensed he really cared for us and our future."

### Sweltering temps don't slow Kaa-nof

Brown shared an anecdote that reflected Knofczynski's caring heart. He took the class in summer 1983 on the south (sunny) side of Crothers

**“We all sensed he really cared for us and our future.”**

—Former student and current Dean Lew Brown on Clayton Knofczynski

Engineering Hall when the building wasn't air-conditioned.

“The temperature in the classroom was in the 80s every day. He wore a white shirt and tie. He would sweat through his clothes. He had a fan brought in, but it was pointed toward the class, not him. He never once complained about it being hot.

“Later in life, I sat next to him at a scholarship banquet and I shared that memory. He had no idea it was miserable. It was just part of the job.”

That interaction also is a reflection of Knofczynski's humility. In fact, “Dad would go up to Crothers every evening to open the windows to allow the classrooms to cool off. Another example of him going out of his way to make the students more comfortable,” son John Knofczynski reported.

### **Like father, like daughter**

For Knofczynski, teaching wasn't just a job, but a passion. “You could tell he loved his job,” said Bowne, who, as the youngest of six children, saw her father's career through the eyes of a child. She was 13 when he retired.

“I always remember him at night bringing home student assignments. I remember how detailed he was about providing comments. It was never just the score. You knew he wanted students to learn. He would leave home at 7:30 a.m. on his bike and he came home at 5:30 p.m. We always sat down for a meal. He helped mom in any way he could. When we were going to bed, he would pull out his schoolwork.

“My dad definitely modeled his aspiration to be a good teacher for his students. This was a primary goal of mine when I started working here and still is today. His modeling obviously paid off because I received the F.O. Butler University Teaching Award 31 years after my dad did,” Bowne said.

Bowne, an associate professor in early childhood education, received the award, which goes to faculty members attaining

the highest level of excellence at SDSU, in 2015.

### **Friend, instructor and mentor**

Brown, who taught at SDSU 9 ½ years before becoming dean, said he tried to emulate the professionalism that Knofczynski displayed in the classroom.

“It was all business in his class. He didn't stand up there and tell jokes. He had a soft-spoken, professional voice. He could have turned that fan on himself and we would have expected that. He could have taken his tie off, but he wanted to set a professional example for us. It showed me that he cared more for me and my comfort than his comfort,” Brown said.

Bassett also said Knofczynski's conduct toward students made a big impression on him.

“He was available and treated students as individual persons and not faces in the crowd. He genuinely heard their questions and did not treat any question as inconsequential. He was able to keep a professional relationship and a personal relationship at the same time. Even students who didn't do well felt like they could still relate to him as a person and a friend,” Bassett said.

Students will often blame the teacher for their poor performance. That was not the case with Knofczynski's students, Bassett said.

Jay Cramer '76, then of Colman and now of Ankeny, Iowa, wrote in a letter to Audrey Knofczynski, “From the first time I met Clayton over 40 years ago, I could see that teaching was where his heart was. Let's face it, the material in many engineering classes can be pretty dry, but he approached it with such enthusiasm that he inspired generations of students.

“I don't recall ever hearing anything but positive comments and admiration for him.”

### **His final classroom appearance**

Knofczynski even briefly came out of retirement to teach thermodynamics for a

few weeks in 2007 when an instructor was on medical leave. “He hopped back in the classroom as if he had never left. He was the perfect fit because he still had all the knowledge and abilities at his fingertips,” said Bassett, who would have coffee monthly with Knofczynski.

He also attended the department's scholarship banquet. Bassett hoped that one day Knofczynski could hand out the first Knofczynski Scholarship.

That never happened. The first award is for the current academic year and went to Tyler Villbrant, a junior from Mobridge.

Bassett hopes to witness more of those presentations. As he does, he will think about the professor who “had a great way of presenting difficult concepts so they were understandable, and who also had high standards for performance in the classroom. That's one of the marks for an excellent instructor,” Bassett said.

Another is the extent to which former students are willing to support a scholarship in the name of their former professor.

*Dave Graves*



## **TO DONATE**

**To the Clayton and Audrey Knofczynski Scholarship Fund at the SDSU Foundation, contact Ned Gavlick at**

**Ned.Gavlick@SDStateFoundation.org or (888) 747-SDSU / (605) 697-7475.**



## Distinguished Alumni

Distinguished Alumni class includes two from engineering

*Two of the six inductees in this year's class of Distinguished Alumni hail from the Jerome J. Lohr College of Engineering. Delvin DeBoer earned his bachelor's and master's degrees in civil engineering (1978/'80) and taught at SDSU for 33 years. Myron Van Buskirk was a 1963 mechanical engineering graduate before going on to found Van Buskirk Companies, a real estate development firm. Both are now of Sioux Falls.*



### Delvin DeBoer

Few are more esteemed in the world of drinking water engineering than DeBoer, who taught in the civil engineering department at SDSU for 33 years and, after retiring from his alma mater in 2012, has served as a private practice engineer with Advanced Engineering and Environmental Services, initially in Fargo, North Dakota, and since May 2015 in Sioux Falls.

"Dr. DeBoer's name and reputation precede him as trustworthy, technically accurate and common sensed," according to Mark Mayer, administrator of the state's Drinking Water Program, who was instructed by DeBoer during his years at State.

Mayer wrote, "I can honestly say, Dr. DeBoer is one reason I pursued an interest in water resources rather than other disciplines in civil engineering. As a student, Dr. DeBoer's classes were always challenging and rewarding. He engaged his students in their coursework, but always did so with a sincere enthusiasm as well as instilling a sense of pride for SDSU."

"Dr. DeBoer would often share stories of other SDSU alumni who were working in the water profession. These real-world examples of other SDSU graduates provided an extra measure of confidence to his students, demonstrating that the learning and curriculum we were studying was preparing us for the real world."

In 2012, the professor emeritus, originally of Corona, was named College of Engineering Researcher of the Year, was made an honorary member of the South Dakota Water and Wastewater Association and received the James Dornbush Award from the association for longevity and service to the Water and Wastewater Association.

In 2013, the American Water Works Association presented him its career achievement award. This April, the Jerome J. Lohr College of Engineering honored him as a Distinguished Engineer.

From 2003 to 2012, DeBoer directed the Water and Environmental Engineering Research Center at SDSU.



### Myron Van Buskirk

The mechanical engineering graduate from Hitchcock found his career niche in homebuilding, becoming one of the major residential and commercial developers in Sioux Falls with such projects as The Bridges on 57th Street, Cinnamon Ridge and Willow Ridge.

He started Van Buskirk Companies in 1971 with single-family home construction and within two years opened a truss-building operation in

Brandon. The business quickly expanded to include land development of single-family subdivisions. In the late 1980s, the company added commercial construction to its portfolio.

By the 1990s, Van Buskirk Companies was doing apartment construction and by the turn of the century had exited single-family home construction and shortly afterward had become a major holder of retail and office properties.

Today, the Van Buskirk Companies encompass four divisions: commercial real estate, residential neighborhoods, apartments and storage, and commercial construction. It also has apartments in Mitchell, Watertown and South Sioux City, Nebraska.

Mike Cooper, director of planning and building services for the city of Sioux Falls, wrote, "Myron is a man who is honest, intelligent, hardworking, reliable and friendly. I have observed him as a caring mentor to real estate development colleagues and as a Sioux Falls roll-up-the-sleeves advocate and community development champion."

Carl Hage, the retired chief executive officer of Home Federal Bank, calls Van Buskirk, "an entrepreneurial man of vision, integrity and ethics ... Land development is a business with many risks and requires great skill and discipline to be successful. Myron was very successful."

Among his community service interests are McCrossan Boys Ranch, where he now serves as president of its foundation and leads the construction and fundraising efforts to build a riding arena for the ranch. Van Buskirk also served on the SDSU Foundation Board in 2001-06 and the SDSU Alumni Council of Trustees in 2007-12.

*Dave Graves*

Other honorees were David L. Chicoine, Brookings, Class of '69; David Gilbertson, Lake City, Class of '72; Karen (Billars) Heusinkveld, Spring Branch, Texas, Class of '67; and Laurie (Stenberg) Nichols, Laramie, Wyoming, Class of '78.

## Alumni Notes



**James O. Edwards '55**, a 1992 SDSU Distinguished Alum and former president of Banner Associates, died June 10, 2016, at Estelline Nursing and Care Center.

The civil engineering graduate spent three years in the U.S. Army Corps of Engineers after graduation and then returned to Brookings to go back to work for Banner, where he had worked during college. He eventually rose to management positions, serving on the board of directors from 1972 until his retirement in 1995. He was president and board chair from 1989 to 1995.

From 1972 to 1994 he also served on the board of Horizons, an aerial surveying affiliate of Banner. He was president and board chair from 1989

to 1994, when the firm was sold.

He served multiple terms on the SDSU Foundation board of directors, was a charter member of the Stan Marshall Golf Classic Committee and was on the SDSU

Athletic Department Advisory Board. He also was an engineer for the Fighting Stallions memorial statue project in Pierre to honor Gov. George S. Mickelson and the seven others who died in the 1993 plane crash.

Edwards, 83, of Brookings, was born March 18, 1933, in Colton. He married Evelyn Van Liere Aug. 26, 1955.

Survivors include his wife; two daughters, Edie (Glenn) Ramstad, of Ada, Minnesota, and Amy (Steve) Kurtenbach, of Darnestown, Maryland; and a son, James (Rita) Edwards, of Madison.

**Soha Hassoun '86**, electrical engineering, received the Marie R. Pistilli Women in Electronic Design Automation (EDA) Achievement Award for 2016.

The chair of the Department of Computer Science at Tufts University and a past general chair of the Design Automation Conference has lead many conferences for computer-aided design, design automation, logic synthesis and timing issues in the specification and synthesis of digital systems.

Hassoun co-founded the International Workshop on Bio-Design Automation in 2009 and is a senior member of IEEE.

**Kermit L. Nelson '52** died July 11, 2016. The 1947 Brookings High School graduate earned his bachelor's degree in mechanical engineering and had lived in California since 1955. Nelson, 86, was a resident of Palm Desert at the time of his death. No services were held. His wife, Helen, died in 2012.

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"I see myself joining the ranks of **PROGRESSIVE THINKERS** who developed the world we live in, and that requires the knowledge that comes from a quality education. Any additional **SCHOLARSHIPS** allow me to concentrate more on my classwork rather than worrying about how I will pay the next semester's tuition and fees."

- **Amanda Muller**, sophomore electrical engineering student

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## Growing enrollment drives scholarship needs



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New and remodeled facilities over the past 15 years have been transformational for the Jerome J. Lohr College of Engineering. It has given SDSU the physical environments for teaching and research that are equal or better than its peers throughout the region.

That process was possible because of the generous investments by alumni, friends and corporate partners. They were responsible for Daktronics Engineering Hall, the Architecture, Mathematics and Engineering Building and the revitalization of Solberg and Crothers halls. Those facilities were critical in the accreditation reviews for all programs within the college.

Without the energy of students, however, those buildings would be empty and quiet. Students are the reason SDSU exists and top-quality graduates are the university's No. 1 product. Although SDSU ranks high in educational value, students continue to cite financial concerns as a major hurdle to completing their education.

Enrollment in the Lohr College of Engineering has grown in recent years due to the combination of programs, facilities and value. With nearly 2,000 students, the Lohr College of Engineering is experiencing a record in enrollment. In order to keep pace, our scholarship offerings must continue to grow. Many graduates and corporate partners have made the investment in scholarships for students in the Lohr College of Engineering. We are grateful you made that choice and the impact you are making on that recipient.

There's a need for new scholarships in every program within the Lohr College of Engineering. Some of our newer programs, like construction and operations management and computer science, have the greatest need. These programs do not yet have the large number of alumni to draw upon for scholarship support, yet they are important to local and regional industry. In addition, recent enrollment growth in traditional programs like mechanical engineering and mathematics and statistics has caused these programs to fall behind in scholarship awards per student.

A portion of your annual engineering phonathon gifts helps fund scholarships. In 2016, more than 1,200 engineering alums have given generously to this yearly effort. Creating your own named scholarship is not as challenging as you may think. You will make an immediate impact on a student. Scholarships can be funded annually or made permanent through an endowed fund.

Recently, I had the opportunity to be part of an informal meeting between a donor and a scholarship recipient. The experience clearly illustrated how gifts can impact both the giver and recipient in very meaningful ways.

Dean Lew Brown stated it best at a recent scholarship awards banquet. "When I was a student, struggling to make ends meet, I received a scholarship from someone I did not know. Giving to fund a scholarship is a way for me to acknowledge how fortunate I was to receive a scholarship while attending SDSU." Our dean and many of our alumni have decided to "pay it forward" and change the future of an unknown student.

The SDSU Foundation is ready to assist in helping you find your way to "pay it forward" at SDSU. Please contact Ned Gavlick or me to learn more.

*Tom Becker*



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